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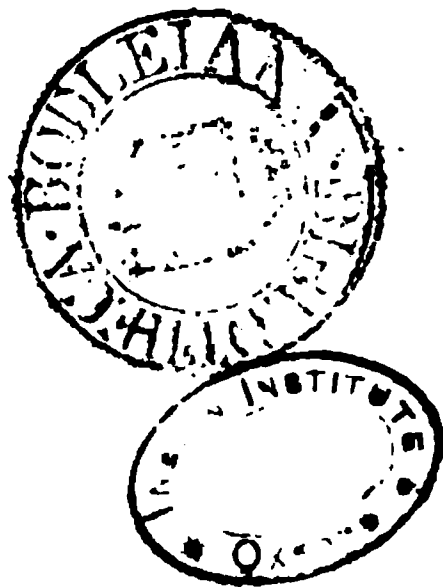
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18-4

JOURNAL
OF THE
ASIATIC SOCIETY
OF
BENGAL.

EDITED BY
THE SECRETARY AND SUB-SECRETARY.

VOL. XIV.
PART II.—JULY TO DECEMBER, 1844.
Nos. 151 to 156.
NEW SERIES.



"It will flourish, if naturalists, chemists, antiquaries, philologists, and men of science, in different parts of Asia will commit their observations to writing, and send them to the Asiatic Society, in Calcutta; it will languish if such communications shall be long intermitted; and will die away if they shall entirely cease."—SIR WM. JONES.

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JOURNAL

OF THE

ASIATIC SOCIETY.

*Note on the Navigation of the river Nurbudda. By Mr. A. SHAKESPEAR,
Assistant Secretary to Government N. W. P.*

The benefit which would result from opening a direct communication from the sea into the heart of Central India, by means of the Nurbudda river, was acknowledged by Major General Sir J. Malcolm as far back as 1820, and steps were taken by that officer for collecting the necessary information.

Since then, although no regular scientific enquiry has been instituted, yet Government has, from time to time, shewn itself alive to the importance of using the stream of the Nurbudda as a medium of communication, and making it an outlet for the produce of the neighbouring country.

Upon its waters the products of the valley of the Nurbudda, rich in mineral and vegetable resources, would be borne to a market, and available for adding incalculably to the national wealth.

But it is only of late years, since extensive coal beds have been discovered to exist within a short distance of its banks, and the value of the mineral to be there procured has been tested and established, that the still greater importance of this stream has been felt.

In the present day, when steam communication has become so extensive and so necessary, we cannot too deeply feel the importance of relying upon this country alone for the supply of coal required for its consumption. No coal has been found nearer to Bombay than that above alluded to in the Hosungabad district. All this supply therefore would be available for the western coast. The discovery of coal beds at a nearer point than they are now, is so remote a contingency, that it can hardly be said to affect the present question.

The following compilation has been made with a view to exhibiting, in a concise form, all the authentic information which has been obtained up to the present time regarding this important river.

The materials from which it has been drawn, consist chiefly of official documents on the records of Government, Information whence obtained. extending from 1820 to the present time. An extract has, however, been appended from an interesting report, to be found in Appendix No. II, of Malcolm's Central India, on the Geology of that part of the country, furnished by Captain Dangerfield.

The map (reduced from one compiled in the Office of the Surveyor General of India,) which will be found attached, shews the course of the river from Hosungabad to the sea. On it the principal obstacles to the navigation are noted.

The amount of information already acquired may be best exhibited by dividing the whole length of the river, from Hosungabad to the sea, into three portions, and treating each separately.

1st. From Hosungabad to Mundleysir.

2d. From Mundleysir to Tulluckwara, and

3d. From Tulluckwara to Baroche.

Hosungabad to Mundleysir.—The river taking its rise in Gondwarra passes Hosungabad in a stream of about 900 yards broad, and is at this point, distant about 318 miles, in a direct line from the sea.

Between Hosungabad and Mundleysir our first information regarding the stream is derived from a report made by a native surveyor employed by Captain Ouseley, Principal Assistant to the Governor General's Agent at Hosungabad.

This survey* was made in 1833-34, and from it Captain Ouseley, considered that "the possibility of making the whole river navigable exists, but the expenses would be great, with the exception of Dhadree, where a loch would be requisite, or portage if an uninterrupted navigation were adopted. There is no place from Behraghur near Jubulpoor to the mouth of the river, that might not be rendered passable for such boats as are now used, thirty or forty feet long and eight or ten wide, flat bottoms. All the places in the sketch marked as rapids could, with trifling expence, be rendered passable. Mundhar, twenty or twenty-five miles east of Dhadree, is a fall of ten feet, but on one side a rapid only, and could be cleared. From Dowlutpoor to Oonkerjee, the sides are high rocks generally, and a contracted and very rapid current running among detached rocks and islets."

The rest of this portion he speaks of as wide and navigable. Regarding the fall of forty feet at Dhadree, he considered, that even if this proved an insurmountable obstacle to a continued navigation, it might be made a place for unloading above, and replacing the goods in other boats below the fall; a portage of half a mile only would be required.

It must be borne in mind, however, that these opinions were expressed upon the report of a native surveyor, who, although a man of apparent intelligence, could have had no experience, and very limited knowledge of the means available for improving navigation. It does not appear, moreover, that he took any steps for ascertaining with accuracy the fall of the river, or making such observations as would afford grounds for deciding on the steps which would be necessary for overcoming the obstructions to be met with.

In 1840, in consequence of the repeated representations of Lieutenant ^{2d. Lieut. Hore's} Hore, Junior Assistant at Sangor, an experimental ^{experimental trial.} trial,† to transport coal by rafts from Hosungabad was made on a small scale by Lieutenant Browne, Principal Assistant at Hosungabad.

In reporting in November 1840, the total failure of the attempt, Captain Browne writes as follows: "From Hosungabad to a distance of 20 or 25 miles below Hindea, the river is open during the rains;

* The original survey is not to be found on record, Captain Ouseley appears only to have submitted the result of it with his opinions.

† Made between August and November, 1840.

but there, from the description of the person sent with the boat, a fall of a considerable height is met with, sufficient to stop the progress of any boat; every inducement was held out to the boatmen to proceed further, but they flatly refused, and would not even permit their empty boat to advance without being insured the value of it."

"From enquiries made of the boatmen at Hindea, it seems that no boat has ever been known to pass this place, and it is considered by them an impossibility."

Captain J. Abbott, late Assistant in Nimar, whilst in charge of 3d. Capt. Abbott. that district, "lost no opportunity of collecting, and noting down, all the information procurable from persons who had visited the principal obstacles." His own actual knowledge was limited to the boundaries of his district. From what this officer states in his observations upon the obstacles impeding the navigation of the river, submitted in March of the present year, it appears that from enquiries he had made, the river is navigable, (except in the driest season, when it is spread over too wide a surface,) from Hossungabad to within 20 miles of the Dhadree falls. That at Dhadree it is precipitated over a ledge of rocks forty feet in height, and for about 20 above this, navigation is impeded by rocks and rapids. The rest of this portion, i. e. from Dhadree to Mundleysir, is navigable the greater part of the year to vessels of light burden; but during the very dry months, from the middle of March to the middle of June, the water at the rapids is too shallow to float the larger river craft.

Regarding the second portion; viz. from Mundleysir to Tulluckwara, 1st Portion. we have fuller and more satisfactory information.

As early as 1820, Major General Sir J. Malcolm had contemplated 1st. Lieut. Mathias' opening a river communication with Baroche, and journey in 1820. with this object several officers were deputed by him to survey the course of the stream. The following extract from a Journal of a Voyage made down from Mundleysir by Lieutenant V. Mathias, of the 6th Regiment N. I. gives us our first information respecting this portion of the river:—

"Left Mundleysir on the morning of the 26th March 1820, in an open boat called a punt, made out of a single tree, about 12 feet in length, 20 inches in breadth, and drawing 18 inches water, with myself, two boatmen, and a small quantity of baggage.

“ From Mundleysir to the Hern Phall, a distance of eighty (80) miles, there is an uninterrupted navigation for small boats from the commencement of the Monsoon till the end of April, and it is then only interrupted in one place,* three miles below Muheysir, where part of the river falls down a small precipice, and a back stream is there made use of for the boats. But during the last six weeks of the hot weather, from the shallowness of the water, and the boatmen neglecting to deepen the back stream as the water decreases, it of course becomes dry ; but should it ever be required to be made use of during those six weeks, I have no doubt, from the appearance of the river, that a little labor would make it navigable all the year round.

“ From the nature of the rocky bed of the Nerbudda at the Hirun Phall, I conceive it impossible that the obstacles to navigate it could ever be surmounted. From the circumstance of small ridges of rocks running parallel to each other in the river, and only distant from twelve to twenty feet, it causes such a rush of water through them, that the boatmen are afraid to pass it, being unable to guide the boat clear of the rocks ; and one which I prevailed upon the men with some difficulty to make the attempt with, was upset, and the men much bruised against the rocks. But a still greater obstacle exists about a mile below that, where nearly the whole water of the river rushes into a channel not more than forty yards broad, attended with a considerable fall, and with such violence, that any boat trying to pass it, must inevitably be lost.

“ Finding myself unable either to proceed along the bed of the river or in a boat, I determined upon getting down to Hamp Island, in the expectation that I should there be able to get boats and return by the river to the Hirun Phall, or if not, proceed from thence to Baroche ; for which purpose I came back about three miles, and landed on the North bank of the river at the small village of Dhair, and proceeded nearly due North to Kooksee along a good cart road, distance ten miles and seven furlongs. From hence I marched in a North-west direction to Rajpoor, distance twenty-nine miles and one furlong ; also a good cart road, but the last twenty miles is through a thick jungle. I then moved in a Southerly direction to Allie Mohun, through an

* Luhevidara.

open jungle, distance nine miles and five furlongs, till within two miles of the place, when it thickens to a deep jungle with small hills. From that to Moondlah, a distance of twelve miles in a South-west direction, through a deep moving country, in many places well cultivated by the Kressans, or Bhillala tribe, and thickly studded with large mowah trees. From this I went to Oomtee in a Westerly direction, ten miles, through a beautiful cultivated country, thickly planted with the largest description of mowah trees; and from hence to Hamp, in a South-east direction, by the Gore Ghaut, is ten miles and six furlongs, and is through a wild hilly and jungle country, cultivated in spots for the first five miles by the Kressans.

“ Here I was much disappointed in finding myself unable to proceed in any direction, from the nature of the country and the rocky bed of the river; and to add to my further disappointment, not a boat was to be procured, nor could I hear of one ever having been seen between the Hirun Phall and Mokree, except the punt, or small passage boat at this place, now useless from its decayed state. The bed of the river is here, when full, about two furlongs in breadth, with masses of large rocks in every direction, and the water at this time confined within a narrow deep channel from twenty to forty yards in breadth, as far as I could see from the highest hill in the neighbourhood; and in one spot that I went to the channel was not ten yards in width, the water rushing through it with a slight fall and tremendous force. Nothing now remained, but to make my way to Makree by the nearest route I could find; but not being able to take my baggage through hills, I was obliged to go to Kewaunt in Guzerat, and only distant from the Gore Ghaut in a Northerly direction eight miles. From that I went to Barsnee, in a South-west direction twenty-one miles and seven furlongs, through an highly cultivated country, thickly studded with mangoe, mowah, palmira and other forest trees. From hence to Tulluckwara on the Nurbudda, in a South-west direction is twenty miles and seven furlongs, through an open jungly country.

“ Here I again embarked, and went up the river as far as Mokree, distance about twenty miles, and there found an insurmountable obstacle to navigation in a fall of the river which of itself is inconsiderable, but prevents the possibility of a boat ever passing it. I then re-

turned to Tulluckwara, where I had left my baggage, from inability to take it with me from the hilly nature of the country."

In addition to this, and in order to establish the fact of the navigability between Mundleysir and Chiculda. ^{2d. Major Wilson's} beyond journey. a doubt, Major Wilson, at Sir J. Malcolm's request,* went from the Hirun Phall to Mundleysir in the end of July 1820, "when the small quantity of rain that had fallen rendered the river uncommonly low for the season."

"The result† of the examination of this part of the river," Sir J. Malcolm writes, "was that with the exception of the portage of Lubevidurrah near Moheysir, where the river, from the fall or rather rapid, is always very difficult, and sometimes dangerous; the navigation between Mundleysir and Chiculda. was practicable for light craft nine or ten months in the year."

Major Wilson also informed Sir J. Malcolm, that from his enquiries, and from the meteorological observations he made whilst he was at Mundleysir, it appeared that the wind blew at this time of year almost always from the West, increasing with the Monsoon, and enabling boats, when the current was at its height, to stem it, and to go in two or three, and sometimes in one day from Chiculda. to Muheysir.

He stated, that the river between Hirun Phall and Mundleysir was almost straight, and that this was a great advantage to the flat-bottomed boats, as they never had to shift sail in coming up. In going down, they were aided by the current and resorted to punting, where that was slack and the water shallow.

Lieutenant J. Anderson of the 17th Regiment Bombay N. I. ^{3d. Lieut. Ander-} was appointed to survey the Nurbudda between son's journey in 1842. Hindea and Hirun Phall in October 1841, but owing to the non-arrival of the necessary instruments, he was prevented from making any regular survey. When ordered to join his Regiment at Bombay, he resolved to proceed via Baroche in a canoe, "hoping to contribute somewhat to the scanty information already possessed regarding the very difficult portion of the river between Hirun Phall and Soolpan."

* In a boat which Sir J. Malcolm mentions, as "a large and rather heavy passage boat."

† We obtain our knowledge of the result of Major Wilson's trip through Sir J. Malcolm. No Journal by Major Wilson being on record.

The following extract from his report gives the result of his observations as far down as Tulluckwara, with an account of the measures he was compelled to adopt when stopped in his further progress at the mouth of the Hatnee river :—

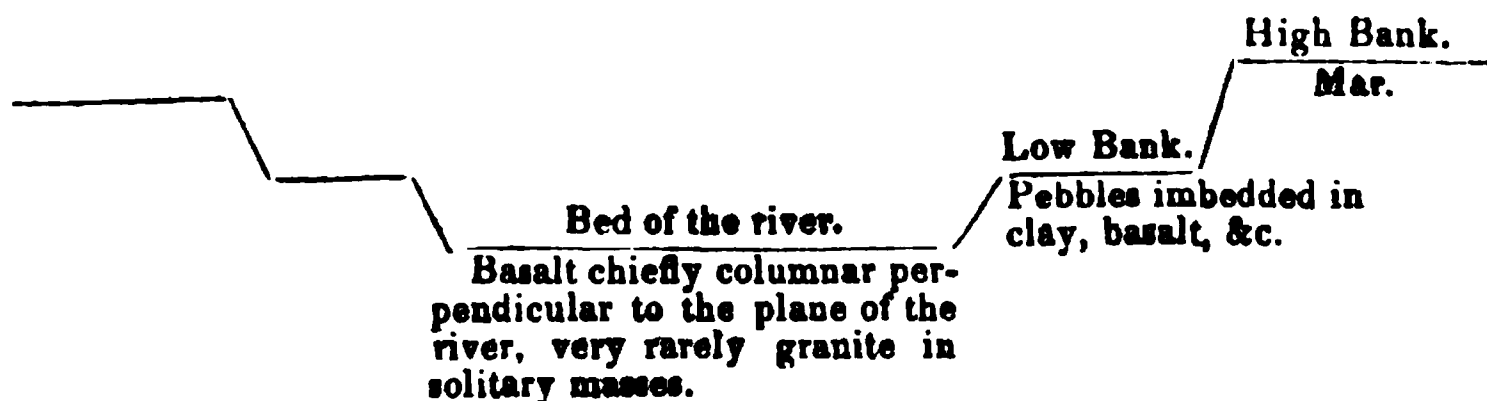
“ I left Mundleysir on the morning of the 21st March 1842, in one of the ordinary passage boats used at the ferry, halted for the night at Kuttora, and arrived at Chiculda on the evening of the 22d at sunset.

“ This portion of the river, fifty-one miles in length, is navigable by boats lightly laden until nearly the end of the dry weather, with the exception of the rapids called Sahesur Durrah, which are about two miles below the town of Muheysir.

“ This is rather a formidable obstruction, consisting of a belt of rock stretching diagonally across the river, and intersected by a great many narrow and tortuous channels, through which the water rushes with great impetuosity, until it is finally precipitated over a shelf about eight or ten feet in height into a sort of trough, at the extremity of which it again becomes navigable. Luckily, however, there is a back stream near the Southern bank, which affords a rather difficult passage for unladen boats until within about a month of the rains, but might easily be made practicable throughout the year by means hereafter explained.

“ Between this and Chiculda there are a few shallows and rapids, but I observed no obstacle particularly worthy of notice, and have no doubt that a comparatively trifling outlay would render this portion of the river available for boats much larger than that I sailed in, for nearly, if not quite, the whole of the year.

“ From Mundleysir to Chiculda, the bed and banks of the river present every where nearly the same features which may be exhibited by the following section :—”



"I left Chiculdah on the morning of the 26th, passed Hirun Phall, slept on the bank of the stream nearly opposite to the village of Burk-hery, and reached the mouth of the Hatnee next evening the 27th, where we spent the night on a rock in the centre of the river.

"Our progress was unimpeded for twenty-five miles below Chiculdah, the river having mostly the appearance above described, until we reached Dhurnarag, and (spelt Dhurm-cote in the plan,) where it makes a bend to the South, and its aspect is totally changed. Here there is a gradual increase in the strength of the current, the rocks become larger and more numerous, and the stream being somewhat contracted, is divided into several channels through which it darts with considerable force.

"Although I experienced little difficulty in passing this rapid, and have ascertained that light boats may be taken up and down at this season without danger, if guided with ordinary care, it is nevertheless to be considered a serious obstruction to navigation, since from the position of the rocks it must be a dangerous spot when the river is swollen, and from its extent it would require a good deal of labour to make it generally available for traffic.

"This is one of those places which, on the score of expense, it might, at first sight be thought advisable to avoid by means of a road; but a more accurate inspection than I had time to afford, would I conceive, shew the possibility of overcoming even this obstacle at no very enormous cost, partly by clearing the channel, and perhaps partly by the mode recommended in my concluding remarks.

"Below this the river is deep, and continues so to the Hirun Phall, about a mile further down, where the greater part of it rushes through a channel only a few yards in width, with a force against which it would be useless to contend.

"The fall of this rapid is gradual, its channel varies little in breadth, and throughout its entire length, which is considerable, the water is broken into foam. But notwithstanding its formidable appearance, of which its length is the most discouraging feature, I am by no means inclined to regard it as so important as has been represented, its proximity to the bank and the slope and position of the neighbouring rocks being particularly favourable for the construction of a road or locks, as might be found most convenient.

“ I here left the large boat, as originally intended, having brought with me a canoe hollowed out of a single tree, and remarkably strong, in which I proposed to make the rest of the voyage. This we managed to get down with but trifling injury, not however until it had been repeatedly upset, and once or twice sunk, although I had a couple of strong ropes attached to it, and the assistance of five or six persons to guide it.

“ If found expedient a road, apparently about a mile and a quarter in length, might be made on the northern side of the river, by which both this and the rapid above might be cut off ; but owing to the unevenness of the banks its construction would be expensive, and it may reasonably be doubted, if the saving obtained by adopting this plan in preference to others would counterbalance the disadvantages of a mixed communication. This question can be determined only by the most careful levelling, and a thorough and minute examination of the spot during the different phases of the river.

“ Between this and Kukranuh, which is about sixteen miles below Hirun Phall, I met with only three interruptions, so exactly alike, that one description will answer for all. At these places there is an abrupt descent of the river, and the channel becomes suddenly contracted, the stream rushing through with such violence, that we were obliged to use every precaution in letting down the canoe. However, it luckily happens that in all of these the fall is inconsiderable, and the channel narrows only in that particular spot, so that unlike the Hirun Phall, there being no length of rapid to overcome, the difficulty of making them navigable would be comparatively small.

“ With these exceptions, I found the voyage both easy and pleasant, and it struck me, that from Hirun Phall to Kukranuh, there were fewer shallows and a greater portion of really navigable water, than in any portion of the river of the same length that I had met with above.

“ At Dhurmeaj, as before stated, the bed of the river is slightly contracted, but below it resumes nearly its ordinary width, the main body of the stream being in most places confined to a narrow channel somewhat resembling a canal. A little below Hirun Phall, the rocks rise on both sides in perpendicular walls, and the water is uncommonly deep, flowing for a long way with a gentle current, and with-

out the slightest impediment. It is also worthy of remark, that in the spots already alluded to, where there are serious obstructions, the rock is but little elevated above the surface of the stream, and that for nearly the whole way from Hirun Phall to Kukranuh there is a low bank either on one side or the other, but generally on both, where a road might be constructed if necessary. The hills on either hand are pretty high, and covered with jungle.

“Kukranuh is a Bheelallee village in the Rajpoor territory, and situated on the Eastern bank of the Hatnee, about a mile from the Nurbuddah.

“Here I was unfortunately compelled to abandon the idea of following the course of the river, the boatmen, from the reports they had heard of the unsettled state of the country, refusing to proceed any farther without an escort to protect them. I accordingly remained at the village for three days, trying every expedient that I could think of; but although I offered a handsome reward, no one could be prevailed on to accompany me to Haump, so great was their dread of the Bheels. Finding therefore that nothing more could be done, and unwilling to incur censure by any further delay, I was forced reluctantly to make for Tulluckwara by land, intending to proceed thence by water to Baroche.

“On the 31st, I marched four coss North to Walpoor, a village belonging to Rajpoor Allee, reached Chucktollah on the 1st April in a westerly direction eight coss, and Kona at five coss West on the 2d, on the 3d I proceeded to Barnee and arrived at Tulluckwara on the 4th.

“There is a garree track the whole way, having the appearance of being much used, which the natives told me was the case; in some parts it leads through a pretty thick jungle, and here and there it is hilly, but no where very steep, and on the whole, it is as good a road as most of its kind.

“I was informed that there is a direct road from Walpoor to Chiculdah; and subsequently learnt, that there is a shorter route from Kowant to Tulluckwara than by Barsnee; from which we may infer, that should my information prove correct, this would probably be the best line of road for establishing a land communication between Chiculdah and Tulluckwara. The distance from Kowant, through Barsnee to Tulluckwara, is about forty-one miles, and that from

Walpoor to Chiculda, cannot, I think, exceed forty, so that taking the shorter route from Kowant to Tulluckwara, and reckoning the cross at two miles, the entire length of road would be about one hundred miles, and Dhurmraj being fifty miles lower down, the distance might be still further reduced by making that the debarking point, instead of Chiculda.

From* the information gleaned by Captain Abbott it appears, that
 4th. Capt. Abbott. the river between Mundleysir and Chiculda is navigable for lightly burdened boats for the greater part of the year. Below Chiculda, he says, the stream is broken by long ledges of rock into a number of narrow channels, forming what is called the Hirun Phall, or Deer's Leap. These rocks, he further states, were described as being extremely solid, and severed by intervals of sixteen or eighteen feet.

"A mile below this, it finds a single channel of forty yards, bounded on either side by cliffs, into which the stream, 600 yards in width, contracts in volume as it rushes down the declivity of this gorge with extreme fury."

This officer, however, after describing from hearsay this formidable obstacle, considers that there are reasons for believing its difficulties to be exaggerated.

To the information thus obtained regarding this portion of the river,
 5th. Sir C. Wade's through Lieutenant Mathias and Major Wilson in testimony. 1820, from Lieutenant Anderson in 1841, and from Captain Abbott submitted in the present year, it may be satisfactory to append the opinion of the late resident at Indore, Sir C. Wade.

He writes as follows: "Having seen the obstructions of the Nurbudda in almost every part surveyed by Captain Anderson, his description of them appears to me to confirm more closely to their real nature than that of any other which I have met with, excepting where he assigns a fall of eight feet at the Suhesur Durruh, near Moheysir, which does not in my opinion exceed five, and with respect to the length of the Hirun Phall fall being considerable, which did not strike me as being so. I should say it cannot exceed sixty or seventy feet, and is composed of detached masses of rock, which I am con-

* This would appear to be independent of Lieutenant Anderson's.

vinced would easily yield to explosion, in the hands of a scientific Engineer accustomed to the removal, by that agency, of such obstacles."

This officer concurred with Capt. Anderson in considering that the magnitude of these obstructions has been exaggerated, and recommended that the survey should be entrusted to one Engineer alone, with such assistance as might be necessary. He considered it a great mistake trusting for our knowledge of the river to partial observations made at different times and by different persons, who each had his own peculiar views on the subject.

Regarding the navigability of the stream between Tullukwara and III^d Portion. Baroche, there is no doubt.

Our first account is derived from Mr. W. Webbe, who furnished a memorandum on this portion of the river in June 1820.

"The navigation from Baroche to Tulluckwara is not open until 1st. Mr. W. Webbe's fifteen or twenty days after the monsoon sets in, Memorandum in 1820. or after the water in the Nurbudda begins to rise, which is generally about the beginning of July; it is first navigated by boats of the burden of ten kulsies or eight candies to fifty kulsies or forty candies, some laden and others not; they run up in four or five days, and sometimes in three with a strong S. W. monsoon wind, and return heavily laden much about the same time with the current in favor. Boats of these burdens can navigate to Tullukwara until the Dewallee feast, or the month of September, after which the navigation becomes difficult, if not impracticable. Those of fifty kulsies have five men in each, and those of ten or twenty have two to four men. These draw, when heavily laden, from five to three and a half feet water; after the month of September these boats take fifteen days to go, having one or two additional hands in each, and return in six or seven days, the current and wind being then against them they are obliged to track the boat in going up.

"After an interval of a few days, and after the Nurbudda has considerably risen, boats of a larger burden, from one hundred to one hundred fifty kulsies (which are the largest) eighty candies or one hundred twenty candies leave Baroche for Tullukwara with ten men in each, the trip up and down is performed much about the same time as those of a lesser burden; they return heavily laden, and leave

this either full or empty. Boats of these burdens can only navigate until September, or three months at the furthest; they draw about seven or eight feet water. These boats go even as far as Deygowm Peeplia, which is about fifteen or twenty coss higher up, but not always with that facility as from Baroche to Tulluckwara, on account of the river having a rocky bed, and the current in places being very rapid, besides there are three Ghauts to pass: Tulluckwara, (which is the most difficult), Ukteysir and Bhimpary. In order to get over these obstacles, the boatmen are obliged to send out long ropes from the end of their mast to be fastened to the trees on the banks of the river, and by this means draw the boat forward over the stream. This passage is performed in three or five days, and is the utmost limit that boats have ever ventured: beyond this the navigation is said to be impracticable. Sometimes these boats in returning from Tulluckwara are interrupted in their progress at the Ghauts, which are seven in number; viz. Tatreedra, Bawapeara, Umraulee, Kundalee, Chaundode, Kenoraulee, Nurendda and Thoomdee, owing to the fall of the freshes, or by an interval of no rain for ten days or a fortnight. The boatmen are then under the necessity of lightening the boat by emptying a part of the cargo into a smaller one along side, and filling it again after passing these Ghauts; this is done by getting a villager from the nearest place, who understands the channel. He proceeds forward on a small raft or canoe with a long bamboo sounding, and the boat after him.

“All boats that leave this for Tulluckwara have a sloping roof built on them with bamboos and mats, to preserve the goods from the rain; the larger ones are also built up at the sides with the same materials to prevent the water washing in when deeply laden. These boats are built like all others that are used on this side, having no decks, with one mast, and a triangular sail.

“Boats from sixty to seventy kulsies burden can go to Tulluckwara after September lightly, but cannot return heavily laden.

“The tide is felt only as far as Reenuapoor, about twenty-five or thirty miles above Baroche, where it does not exceed a span in height.

“It is impossible to fix dates when the navigation of the river opens and ceases: all depends on the monsoon, and the quantity of

rain that falls inland in the countries through which the Nurbudda takes its course: if it begins early, the boats of course leave this early, and the navigation continues as long as there is sufficient water for them to float up and down; the time stated above is generally the month fixed for it. Last year being a season of unusual heavy rain, the navigation was open until January 1820.

"The commodities carried from hence are salt, cocoanut, sugar, beetle nuts, dates, both dry and fresh, brooms, cocoanut shell, hooka bottoms, earthenware, pepper, spices of all sorts, and curry stuff; and sometimes when there is a scarcity, wheat, rice, and paddy. The returns are mowda, honey, timber, rafters, bamboos, bamboo mats, and sometimes till, ghee and hemp.

"The above information is from some of the most intelligent merchants who have traded for thirty-five, twenty-five, and twenty years up and down from this to Tulluckwara and Deygaum Peeplia; these men go themselves every year in their boats, and always assist the boatmen in navigating their vessels.

Further information is contained in the Journal forwarded by Lieutenant Mathias in 1820.

"Here* I once more embarked on the 2d May, but in a larger description of boat, being nearly thirty feet in length, three and a half in width with a flat bottom; the other that I had for my people was in every respect like an English boat, with a keel, &c. &c., and it drew two and a half feet water. The only interruption I received from this to Baroche, even at this advanced time of the year, was at the Bawapeer and Tantee Dag Ghauts, where the large boat was detained a few minutes by the shallowness of the water, so that there is an uninterrupted navigation for the largest description of boats that sail in the river as far as Peeplia, thirteen miles above Tulluckwara, during the rains, and for two months after it; but from the hilly and broken nature of the country, Tulluckwara is the highest situation up the river that could be fixed upon as a depôt, particularly as there is a good cart road from that to Chicul-dah by Barsnee, Odeypoor, Rajpoor, and Cooksee, or by Barsnee, Paul Mahaul, Parmwaur, Rajpoor, and Cooksee, by that making the

* At Tulluckwara.

greatest possible distance for the land carriage to Chiculda or Dhair 115 miles. But several miles would be saved by going to Loosaree, leaving Cooksee on the left hand ; and again by not using the more frequented road by Oodeypoor but that of Paul Mahaul and Pansaur, from which I have no doubt that the distance of the land carriage from Tuluckwara to Chiculda, as we become more familiar with the road, would be reduced to a hundred miles."

The following Journal of a voyage up the Nerbudda in the Honorable Company's Pattimar "Tpty," by Lieut. Elwon, Honorable Company's Marine, received in 1822, will be also interesting in this place.

"Sailed from Baroche, June 24th, and anchored at Jerresul, where
 3rd. Lieut. Elwon we were obliged to remain during the following day,
 in 1822. there not being sufficient water on the Jerresha Ghaut. On the 26th cleared the Ghaut, and passed through the Pora Ghaut without meeting with any more obstruction, in the evening anchored at Ramnapore, found the river here very narrow with a continual strong ebb tide. On the 27th, entered the Bowapearra Ghaut, and employed warping until the evening of the 29th, when we cleared it. I am informed the freshes begin to come down about the latter end of May, or beginning of June, and this part of the river remains navigable until the middle or latter end of September. The freshes continue seldom more than three days at a time, after which the water decreases, never leaving less than one fathom water at Bowapearra Ghaut ; although it is fordable in the fair season, being dry or most water three feet, when troops often cross. This day entered the Amraully Ghaut, and employed warping during the following day, when we cleared it ; and on the 1st July passed with little difficulty through the Nurkurry Ghaut, and in the afternoon anchored at the entrance of Cottarar Ghaut, there being no wind. Not being able to proceed, I returned in the Bunder boat to Chaundode, one of the largest villages on the banks of the Nerbudda ; it has a very convenient landing place with steps built of bricks and chunam, which has a very good appearance from the water. It has some trade with Brodera, carrying there timber, for which they receive cash. To Baroche they take mowa in considerable quantity, also honey and ghee, receiving in return rice, wheat, dates and salt ; they carry up the river as far as Mokree, in small canoes called toonies, salt, native cloth, pick axes,

brass dishes, and Brodera rupees, in return for which they receive bamboos, rafters and timber, which track along the bank of the river to Chaundode. The two following days employed warping through the Cotarrar Ghaut, where the bottom being hard sand and stones interspersed with rocks towards the banks, and the tide very strong, we were obliged to back the warping anchor with the boat's small anchor. On the 4th of July, while at anchor off Toomree, there being no wind, we were visited by the Jemadar, who said the country hereabouts is much infested by thieves; he has a guard of ten sepoy. Toomree is a small village; there is excellent pasturage in the neighbourhood. I saw some good cucumber plants and Indian corn here. Wheat I understand is not cultivated at all up the river. I observed hackeries at this place, the wheels of which were superior to any of the sort I have seen in other parts of India. In the afternoon a breeze springing up, made sail, found as we approached Tulluckwara, the tide considerably stronger, and although a pleasant breeze, were obliged to resort to the warp to gain the landing place. On 5th and 6th, employed gaining information which was but scarce, as the people apparently knew of nothing out of Tulluckwara; not even the Patill could tell me any thing of the surrounding country that I could at all think satisfactory.

“ The following are questions answered by two matchies, or pilots, at Tulluckwara :—

“ *Question.* What time does the water begin to increase here ?

“ *Answer.* About 1st June, when the rains commence, and then rapidly.

“ *Q.* When does it become very low ?

“ *A.* After the rains, or end of September, when it soon decreases, having no more than two feet and six inches water at Tulluckwara in the hot season.

“ *Q.* When do the large boats come from Baroche ?

“ *A.* End of July or beginning of August.

“ *Q.* Are those boats larger than the Honorable Company's Patti-mar Tapy ?

“ *A.* No ; about the same size, or fifty candies.

“ *Q.* Do they go higher than Tulluckwara ?

“ *A.* No, the only boats that go above this place are small canoes or toonies.”

“ July 7th, having made the necessary preparations, Mr. Zigler and self proceeded up the river in the Bunder boat, with six extra hands, to assist in towing, also accompanied by the pilot in a canoe; found the tide soon after leaving Tullukwara so strong, we were obliged to track the boat, and this could only be done by the people wading through the water. At seven, entered the Busseean Ghaut, a few minutes afterwards observed a curious rippling in the water on the larboard bow. In passing this place close, I was surprised to find the water formed a number of whirlpools, hauled the boat close round, and on towing about ten yards found her prevented proceeding by the rapidity of the tide, and it was with difficulty the boat was kept from dropping astern. The pilot now directed she might be taken further out as there was not sufficient water ahead; this we succeeded in by securing the boat to some chinny we were amongst, but the water was running with more force, and it required great exertion for the people to stand and save themselves from being carried away; this would have happened in all probability had it not been for the chinny which assisted them, and also answered to catch a turn with the boat's painter. The men exerted themselves much, and seemed determined to overcome this obstruction to our progress; but I found after a long trial, their endeavours were quite ineffectual, although I had twelve men on the boat's painter. I asked Mr. Zigler his opinion on the spot, and as I found him the same way of thinking as myself, I determined to return, and in a few minutes we were out of this perilous situation.

“ On the 10th, made a second attempt with no better success. On the 11th, as the water had risen considerably, and five hands (1½ fathoms) water on the same parts of the sand banks abreast of Tullukwara, I endeavoured again to get up the Bundur boat, but the tide was too strong even here, (where I expected to meet with little tide from the quantity of chinny,) that the boat, with sails up and eight oars out, dropped astern. It is worthy of remark, that the Gunner a short time after this, who I had forgot was not aware of the difficulties I had met with, was directed by me to proceed up the river and place flags on the North side while I went up the opposite side. He took it for granted he was to go up in the boat, to do which he had to go through the Ghaut, where, after endeavouring about two hours, he was not a little surprised to find himself obliged to return.

The Basseean Ghaut is nearly a mile from Tulluckwara, and has a stony and rocky bottom; the water runs with such rapidity, that I have no hesitation in saying, it is impossible for a boat to overcome it at this time of the year, and had I been able to have got through, I still never should have dreamt of reporting it navigable after the difficulties I met with.

“From this time I commenced the survey of the river downwards. Tulluckwara stands close to the river side on the top of a high bank, the landing place, the South-east side of the town, and has a steep ascent, very difficult to surmount in wet weather; the fort has but three sides, being open to the water side. There are one hundred and fifty infantry and fifty cavalry residing within the walls; the remaining ryots live outside. There is only one boat belonging to Tulluckwara, which is for passengers. The Putell (Boman) informed me there are not more than fifteen hackries in Tulluckwara, and that in the finest time of the year, they cannot go up higher than Gurneysur, which is said to be only three coss from Tulluckwara. I was also informed the freshes rise sometimes to an extraordinary height; that they never remain there more than nine days, when the water decreases, leaving not more than eight hands water (two fathoms) at Tulluckwara. I was not able to get any information respecting the roads between this and Mhow.

“After meeting with many difficulties from the freshes, which often carried away our flags, and caused great detention, we reached Bundarea on the 24th, and were compelled to remain three days by the freshes. On 27th, I was informed of the arrival of the Rajah of Naundode at Jawur, a village close to where the vessel was at anchor; I shall merely say I paid my respects to him. On the 1st of August, anchored abreast of Chaundode, many of our people on the sick list, principally through fatigue; questions answered by the merchants of Chaundode:—

“Q. Do you trade to Mokree and above?

“A. Yes.

“Q. When does the trade commence between Chaundode and Mokree?

“A. In November (Cartig mina) and lasts until the end of February or beginning of March.

“ Q. What articles do you carry there?

“ A. Cloth, salt, and spices.

“ Q. What do you bring away?

“ A. From Dunneer, (above Mokree,) spars about eighteen feet long (fit for boat's masts,) and from Mokree, rafters and bamboos.

“ Q. What places above Mokree have your boats been at?

“ A. With distances from each other.

Southern side of the river,	{ Soolpan, 3 miles above Mokree.	{ Rajpeplia.
	{ Dankerrah, 3 ditto above Saulpan.	
	{ Shemokeree, 3 do. above Donkerrah.	{ In the Bheel country Parwee Raja Ker Dun- nee.
	{ Warmong, 3 do. above Shanokeree.	
North side of the river,	{ Dunneer, 3 do. above Warmong.	{ Rajpeplia.
	{ Wargaum, opposite Mokree.	
	{ Guddur, 4½ miles above Wargaum.	

“ Q. What description of boat can go up to Mokree?

“ A. Toonies drawing two hands water (three feet,) when loaded can go up as far as I have ever traded (to Dunneer.)

“ Q. How do you get your boats up from Chaundode to Mokree?

“ A. Tracked up; the sails are of little use then, the wind being mostly down the river.

“ Q. How many men do you put in your boats then?

“ A. Eight, ten and twelve.

“ Q. Does the water run with great force then?

“ A. Equally as strong as in the month of July, 6, 7 and 8 miles an hour.

“ Q. How much water in Chaundode Ghaut in the dry season?

“ A. Three hands ($\frac{3}{4}$ fathoms.)

“ Q. How do you get your boats up the Mokree fall?

“ A. They are emptied of their contents, and then hauled up the fall.

“ Q. How many men are necessary to get the boats up the fall?

“ A. Twenty.

“ Q. How far have they to go before they can be reloaded?

“ A. From eight hundred to a thousand feet?

“ Q. How is your merchandize transported that distance?

“ A. On men's heads.

“ Q. Have they any hackeries at Mokree?

“ A. No; the country is too mountainous.

" Q. Can men be procured about Mokree to assist you with your boats?

" A. Plenty, at three and four annas per day.

" Q. What water at commencement of the fall?

" A. Two hands (three feet), and above Mookree fall 4, 5, 6, 8, 10 and 12 hands, (as much as three fathoms.)

" Q. How do you act coming back over the Mookree fall?

" A. Empty the boats at the fall, and as there is not then sufficient water to float the boats for about four or five hundred feet, they are launched along a smooth bed of stones, which are very slippery, being covered with a grassy substance, and they are guided down the fall with little trouble, when the boats being reloaded, proceed with ease to Chaundode in two and three days.

" Q. Have you ever seen or heard of boats in great danger of being lost going up the fall?

" A. No.

" Q. Can boats go up above Dunneer?

" A. Yes.

" Q. Why is trade not carried on above that place?

" A. Because of the thieves, who would not pay above half the price they would bargain to give for what we carry.

" I have measured one of the boats at Chaundode employed in the trade to Mokree and above. Her length twenty-two feet, breadth four feet and ten inches, depth two feet, her bottom quite flat.

" *August 20th.* Reached Linnore, learnt there is a trade to Mokree and above, their cargoes are carried to Chaundode in large boats, when they are put into the toonies and proceed as afore-mentioned.

" *August 25th.* Entered the Bowapearra Ghaut, where we met with much difficulty from a heavy fresh and unfavorable winds. On September 1st, we reached Ramnapore, since which time we got pretty well, until the fresh commenced, which compelled us to return to Baroche."

Lieutenant Anderson (the report of whose journey between Mund-
4th. Lieut. Ander- leysir and Tulluckwara has already been given,) son in 1842. concludes the account of his trip as follows:—

" I embarked at Tulluckwara on the morning of the 5th, and arrived

at Baroche on the 7th, having performed the entire journey from Mundleysir in twelve days, not including the delays at Chiculda and Kukranuh, and I am convinced that I should have accomplished it in less time, had I been permitted to proceed altogether by water.

“ The following extract from the report drawn up by Captain Dangerfield, and to be found in Appendix II, of Malcolm’s Central India, gives some valuable and interesting information regarding the bed and vicinity of the Nerbudda, and may well find a place here.

“ The banks of the Nerbudda for a considerable distance between Mundleysir and Chiculda are from forty to seventy feet high, and consist, independent of a thin upper layer of rich vegetable mould, of two distinct strata of alluvium the upper which is very light coloured, contains a great quantity of indurated marl, and is strongly impregnated with muriate of soda or common salt, which the natives extract by lixiviation and subsequent evaporation by the sun, in shallow compartments near the banks, and sell it to the poorer classes, particularly the Bheels in the neighbourhood. This stratum is usually from thirty to forty feet thick.

“ The one on which it reposes, and from which it is divided by a strongly marked horizontal line, and a difference of colour, (this last being of a redder hue,) contains a very large proportion of carbonate of soda in general, but slightly contaminated by the muriate. This bed rarely exceeds ten or fifteen feet thick, and rests immediately on the basalt forming the bed of the river. In the dry season, both these salts form a thick efflorescence on the surface of the bank, and this alone is collected by the natives. That from the lower bed forms an article of export for the use of the washermen, &c. &c.; but the soda itself is not extracted like the common salt, nor is its value but in the above way known.

* * * * *

“ The bed of the Nerbudda, consisting as already remarked, for a considerable portion of its course of basaltic rocks, gives rise to numerous shallows and small falls. Of these, the three principal are, one at Deyree, where the river is much contracted: a second at Semadarah, a little below Mhysir; and a third at the Hurn Pahl, or Deer’s Leap, below Chiculda: whence, till its entrance into Guzerat, the stream

finds its way contracted to within half its usual breadth between two hilly ranges, and its course being much impeded, so as to render navigation impracticable, by large masses and elevated ridges of the rock.

“Passing higher up the stream from Mundleysir, the Northern bank, after about thirty miles, becomes rocky and precipitous, and consists of gently inclined beds, chiefly of green stone slate, containing interposed mica in small grains. But the island of Mundatta and part of the opposite bank appear mostly to consist of horn stone slate of a reddish or greenish grey, and sometimes porphyritic. Above this for a considerable distance is, on each bank, a very wild woody tract, resembling that already noticed below Chiculda, excepting that the river is in general deep, and less obstructed by rocks.

“This part consists of a succession of low hills and deep ravines and water-courses, is covered with high thick forests, and is scarcely capable of being travelled in most parts for seven or eight miles from the river by any but foot passengers. Iron ore abounds ; but the country being almost desolate, it is only smelted at Kantcole and Chandgurb, for the supply of the Indore and neighbouring markets. It is of a good quality, but from the imperfect mode of working, the metal is little valued, excepting for common purposes. The hilly tract below Chiculda is better populated, chiefly by wild Bheel tribes ; and nearer Broach on the Southern bank are the Rajpeeply hills, inhabited by the Coolie tribe. In these hills are situated the several cornelian mines, of which a concise account has been given by Doctor Copland, in the first volume of the Bombay Literary Transactions. From Burwae to Chiculda, the whole valley, from the Satpoora to the Vindhya mountains, is nearly level, well watered, cultivated, and inhabited.”

Supplement to Note on the Navigation of the Nerbudda River.

To make the Note more complete, a few extracts have been made from a paper on the Nerbudda river, by Lient.

Vide Note at the end. E. P. De l'Hoste, 16th Regiment, N. I. to be found in the Volume of Transactions of the Bombay Geographical Society, from 1836 to 1838.

The information afforded by Lieutenant De l'Hoste, although
 [Of Portion II.]
 6. Lieut. De l'Hoste it relates only to the portion of the stream between Soolpan and Tulluckwara. Th
 in 1829. informs us that he left Tulluckwara in April 1829, with the
 of following the course of the river towards its source as f
 could. He got as far as Soolpan,* at which point he writes, th
 "stream of the river from being from 60 to 100 yards broad, a
 "narrows to about 60 feet, and on each side is hemmed in wi
 "precipices; the middle of the river is also studded with large
 "and the stream, even at this season, rushes through the in
 "with surprising rapidity, dashing large pieces of wood whic
 "floating down from one side to the other with a force which n
 "could have withstood, neither indeed, would it be possible to
 "boat in such a rapid current through such a tortuous and a
 "channel. Both banks are precipitous and covered with thick f
 "and all further progress is rendered impossible."

Indore

Regarding the stream at Mokree Ghaut, where he descended in
 bed of river, he says, "at this place there is a ridge of rocks stret
 "completely across the river, which is nearly one hundred
 "broad, causing a fall of about 12 feet in height. I took the op
 "tunity of bathing in the river, the water of which was perfectly c
 "The force of the current was such as to compel me to hold o
 "the large rocks, of which the river is full below the fall; the
 "was covered with large round pebbles, rendering it difficult
 "walk."

At the village of Goragaum (about $5\frac{1}{2}$ miles below Mokree,) he sa
 "that the course of the river appeared impeded by rocks, throu
 "which the stream passed with a continued gurgling sound, that cou
 "be heard at a considerable distance."

At Gurreysir, distant 6 miles from Tulluckwara on the right ban
 he crossed the stream in a good sized boat, and writes as follows r
 garding this part of the river: "Beyond (i. e. above) this village, th
 "river appeared full of large rocks, the passage for the water betwee

* Vide Transactions of the Bombay Geographical Society, from 1836 to 1838, No VI. p. 174.

"which was barely three or four feet, the total breadth was 80 yards
"at this point, and the depth of water where I crossed (in the centre of
"the stream) 18 feet, measured with a pole; the right bank was low,
"level, and slightly covered with jungle. * * * The left bank on the
"contrary, was precipitous and rugged towards the river, but towards
"the South, numerous ranges of hills covered with jungle were visible.
"These hills form the end of what is called the Sutpuri range. I may
"add, that as far as Soolpan, the features of the country were similar."

Between Gurreysir and Tulluckwara, "the road lay over a level and
"well cultivated tract of black soil; the course of the river was visi-
"ble the whole distance, and offered no impediments whatever to
"navigation; the depth ascertained from the guides, varied from
"twelve to fourteen feet."

A. SHAKESPEAR,
Assist. Secy. to Govt. N. W. P.

*Some original Passages on the early Commerce of the Arabs. Communi-
cated, by Dr. A. SPRENGER, B. M. S.*

The Academy of Berlin offered some years ago a prize for the best treatise on the commerce of the Arabs during the first three centuries of the Khalifat, and the question has been answered in such a manner, that the Academy awarded the prize to one of the candidates. The prize essay has indeed the merit, that there are collected in it most of the materials which were within the reach of the author; that is to say, passages from original works which had been translated and printed. But out of the thousands of Arabic manuscripts, which are preserved in European libraries, not fifty have been translated. This prize essay is therefore merely to be considered as a nucleus to which those who have access to unedited sources may add new materials.

We may expect to find very detailed and exact information on the Arabic commerce; for early in the third century of the Hijrah, several works have been written on the commerce of the Korayshites. One of the authors of such a treatise is the celebrated historian Madáyiny. I have, however, never met with any quotation from these works, and if

Azraky, of whom we possess a history of Mekka,* gives no extracts from them it is very likely that every trace of the information which Madáyiny and other diligent traditionists have gathered, is lost.

Abú 'Othmán 'Amr Bin Mahbub Kenany Jáhiz الجاحظ † a man of great learning, but of a very eccentric tendency of mind, wrote a book on commerce كتاب النظرة في التجارة which is frequently quoted by Novayry, who died in A. H. 732, (A. D. 1331,) and it appears therefore, that copies of this interesting book were still extant in the fourteenth century. It seems, that most of the extracts which I have collected on the commerce, flow originally from the same source, the work of Jahiz.

The object of this Memoir being merely to publish inedited fragments, the information which Masudy Edrisy and other authors give, whose works have lately been published, can find no place in it.

I propose to give in another Memoir, some further notices on the commerce of the Arabs with China and Polynesia, and of their geographical knowledge of the South seas.

I.—A passage from Ibn Khordadbeh.—On the Mercantile Roads.

Abú-l-kasim 'Obaydullah Bin Abdullah Ibn Khordadbeh, flourished towards the end of the third century; this author has been the object of considerable controversies among the orientalisists of Europe. Yet the two principal, nay, only passages on his life, having escaped even the learning of De Sacy, it will be interesting if I insert here one of the two; the other is contained in the second part of Al-mas'údy, and I shall therefore translate it in the progress of that work.

In the Fihrist (MSS. of Paris, folio 202, recto,) which has been written in A. H. 377, the following notice is given of Ibn Khordadbeh:—

ابوالقاسم عبید الله بن احمد (sic) بن خرداذبه وكان خرداذبه
مجنوسيا يسلم علي يد البرامكة فتولى ابوالقاسم البريد والخبر بنواحي
الجبل ونادم المعتمد وخص به وله من الكتب كتاب ادب السماع
كتاب جمهر انساب الفرس كتاب المسالك الممالك كتاب الشراپ
كتاب اللهو والملاهي كتاب الانوا كتاب الندماء والجلساء

* There are several MSS. of this ancient work in Europe, one is at Cambridge which has been left by Dr. Burckhardt, who in the preface to his Travels in Arabia, professes to have largely made use of it.

† Jahiz died in A. H. 255, (A. D. 868,) at an age of ninety-six years.

“Abú-l-kasim Obaydullah Bin Ahmed (thus the name of our author's father is written in the Fihrist) Bin Khordadbeh. Khordadbeh, (the grandfather of our author) was a Magian, and was converted to the Islam by the Barmakides. Abú-l-kásim (our author) was consequently appointed over the post and intelligence (spy) department in the provinces belonging to the Jebal, subsequently he came to the court of the Khalif Mo'tamed (who came to the throne in A. H. 256,) and became one of his privy counsellors. He wrote,

“1. *Æsthetical observations on Music*; (Mas'údy gives a very interesting extract from this work in his life of Mo'tamed.) 2. On the most celebrated Genealogies of the Persians. 3. On the Roads and Kingdoms; (this is, the title of the Geographical work from which I derived the following extract.) 4. On Drink. 5. On Playing and Amusements. 6. On the Stars.(?) 7. On Courtiers and Companions.”

The geography of Ibn Khordadbeh is the only work which we still possess of this author, and of this there is only one copy in Europe. The MS. in question is ancient, bearing the date of A. H. 630 (A. D. 1232,) but it wants in most instances the diacritical points. It is preserved in the Bodleyan Library at Oxford, (No. 993,) and has been transcribed by the author of this Memoir for his own use in 1838, and from this transcript, the following passage is derived:—

التجار اليهود الرانية الذين يتكلمون بالفارسية والرومية والعربية والافرنجية والاندلسية والصقلبية فانهم يسافرون من المغرب الي المشرق ومن المشرق الي المغرب برا وبحرا يحملون من المغرب الخدم والجواري والغلمان والديباج والجلود والنخز والسيوف ويركبون من فرنجة في البحر الغربي فيخرجون بالفرما فيحملون تجارتهم علي ظهر الي القلزم وبينهما خمس ايام وعشون فرسخا ويركبون البحر الشرقي من القلزم الي الحجاز وجدة ثم يمضون الي السند والهند والصين فيحملون من الصين المسكت والعود والكافور والدار صيني وغير ذلك مما يحمل من تلك النواحي حتي يرجعوا الي القلزم ثم يتحولون الي الفرما ثم يركبون في البحر الغربي وربما عدلوا بتجاراتهم الي

القنسطنطينية فباعوها وربما صاروا بها الي ملك الفرنجة فيبيعوها
هناك وان شاوا يركبوا بتجاراتهم من فرنجة في البحر الغربي فيخرجون
بانطاكية ويسيرون علي الارض ثلاث مراحل ثم يركبون في الفرات
الي بغداد ثم يركبون في الدجلة الي الابله ومن الابله الي عمان
والسند والهند والصين كل ذلك متصلا بعض ببعض *

Here is a lacuna in my MS., in which instead of copying the Arabic text I wrote a few lines in a German translation, of which the meaning is given in the English version added to this text. After that, my copy continues:—

بحر رومي فيعشرهم ملك الروم وان شاوا صاروا في نهر
الصقالبة فمروا بخليج مدينة الخزر فيعشرهم صاحبها ثم يصيرون
الي بحر جرجان فيمخرجون في اي سواحل احبوا وقطر هذا
البحر خمس مائة فرسخ وربما حملوا تجارتهم من جرجان علي
الابل الي بغداد

فاما مسلكهم في البر فان الخارج منهم يخرج من الاندلس
ومن فرنجة فيعبر الي سوس الاقصى فيسير الي طنجة ثم الي افريقية
ثم الي مصر ثم الي رملة ثم الي دمشق ثم الي كوفة ثم الي بغداد
ثم الي بصرة ثم الي الاهواز ثم الي فارس ثم الي كرمان ثم الي
السند ثم الي الهند ثم الي الصين وربما اخذوا طريق ارمنية (?)
في بلاد الصقالبة ثم الي خليج مدينة الخزر ثم في بحر جرجان
ثم الي بلخ وما ورا النهر ثم الي تغزغز ثم الي الصين *

Translation.

“ The Jewish merchants called Raniens, who speak Persian, Ruthish, Arabic, Spanish and Sicilian (Italian,) travel by land and sea from East to West, and from West to East. They export from the West (from Europe,) male and female slaves,* soldiers, brocades, beavers and swords; they sail from the country of the Franks on the Western

* The Bishop of Arles wrote a book against the Jews to Charle-Magne, in which he accuses them of stealing and forcing away Christian children, and of transporting them as slaves to Spain and Africa.

sea (Mediterranean,) and disembark at Ferma, from thence they transport their wares by land to Kolzom, which is a distance of five days' journey and twenty farsangs. From Kolzom they sail in the Eastern sea to the Hijaz and Juddah, thence they proceed to Sinde, India and China. From China they export musk, aloes, camphor, cinnamon,* and other articles which are exported from that country; with these they return to Kolzom, and from this harbour they carry their goods to Ferma, where they put them on board the ship to sail in the Mediterranean, either to Constantinople where they sell off, or they go to the country of the Franks and sell their wares there.

"There is another road. If they choose they bring their goods from the Mediterranean to Antioch, to which town they have to transport their goods by land, only three days' journey. Then they go down the Euphrates to Bagdad; then they go on to Tigris to Obollah; thence they sail to 'Oman,† Sind, India and China, for all this is one uninterrupted road for navigation.

"The Russian merchants who are of Slavonian origin, export the furs of beavers and of black foxes from the most distant part of the Slavonian country, and bring them to the coast of the Rumish sea (Black sea,) where the Greek emperor levies customs on them. Or if they chose, they go in the river of the Slavonians (Wolga,) and they pass in the Gulf, the town of the Khazar, where they are taxed by the Khazar king (who was a Jew,) and thence they continue their navigation into the sea of Jorjan (the Caspian,) where they land in any

* "From China," says Cosmas Indicopleust. (Cap. xi,) "silk, aloes, caryophyllum and tsandama are exported." The centre of the commerce of the South sea appears from the same author to have been Ceylon. At Ceylon there are vessels from "Æthiopia, India and Fars. It has also commerce with Mala, from which pepper comes, and with Calliana whence metal (ms.) various sorts of wood (ligna,) sesamum and stuffs for dressing are exported, and with Sinde which exports musk or castoria and androstachys."

† The *Jehannuma* (A Turkish work on geography, printed at Constantinople A. D. 1731, p. 543,) contains the following list of articles which are to be found at 'Oman

مسك زعفران بقم ساج عاج لؤلؤ ديباج جزع ياقوت ابنوس نارنجيل
قند و سندروس صبر حديد رصا حيزران غضار صندال بلور فلفل
دارچيني قرنفل نيل عود و انواع اقمشه عنبر شروب جلود نمور *

coast they like. The length of this sea is five hundred farsangs. Sometimes they transport their goods on camels from Jorjan to Bagdad.

The following are the land roads of the merchants: they proceed from Spain or France, and set over the Straits to Sus el-aqsa; from thence they proceed to Tangiers; thence to Ifrikyyah; thence to Egypt; thence to Ramlah; thence to Damascus; thence to Kúfah; thence to Bagdad; thence to Basrah; thence to the Ahwaz; thence to Fars; thence to Kerman; thence to Sinde; thence to India and China.

Sometimes they go by the land road of Armenia (?) in the country of the Slavonians; they proceed to the gulf of the town of the Khazars; thence they sail on the Caspian (to the mouth of the Oxus); thence they proceed to Balkh and Ma-wará-n-nahr; thence to Taghohoz; thence to China.*

II.—*Extract from the Kitab-et-boldan.—On the Mercantile Roads.*

The following extract has been copied from an Arabic MS. of the British Museum, (add. MSS. N. 7496, folio 75, recto.) This volume contains a very interesting work on geography, which as it appears from its contents, was composed in the fourth century of the Hijrah. The author's name is not mentioned, but in the fly page an opinion is expressed, that it is an extract from *Bilazory's Kitab Fotúh al-boldán*. This opinion is not founded, for the work is not as ancient as Bilazory; moreover, I have read the *Kitab al-Fatúh* of Bilazory from one end to the other, and I found that the two books have not one sentence in common.

The geographical work in question is the best Arabic work on geography I know of. It contains in most instances the history of the

* El-Mas'udi gives some details respecting this road to China, (vol. i. p. 333.) From his account it appears, that there is a path from Samarkand over the mountain, now called Kara Tagh and the desert. The distance of this way to the Chinese frontier was forty days journey, but it was dangerous, and camels could not be taken on it. The caravan road which avoided the mountains and desert was four months' journey.

The latter road was known to the ancients. Cosmas gives even the distances, though not very correctly. The distance from China to Persia (Balkh) is according to him, 150 days' journey to thirty miles each; the way through Persia was eighty days' journey; the road from Nisibis to Seleucia (Bagdad) was thirteen days.

In another passage (Vol. II, p. 138,) Cosmas says, "If you go from Persia to China by land, you have a much shorter way, for this reason you always find a large quantity of silk in the Persian markets."

places which are described in it ; the relations of one city to another, the ancient Persian name, interesting pieces of poetry, &c., yet it has hitherto escaped the notice of the learned, owing no doubt to the scarcity of MSS., for to my knowledge there exist only two copies of this book in Europe ; the one in the British Museum which is ancient, correct and clear, having almost all vowel points, and one in the East India House, which if I recollect right, has Number 617. Haji Khalfa seems not to have been acquainted with the book.

On comparing the following passage with the passage of Ibn Khor-dadbeh which precedes, we cannot doubt that they both flow from the same original source, as we have said above. We compose the decomposed rays of light to obtain again uncoloured truth.

الري واليهما يقع تجارات ارمينية واذربيجان وخراسان والنخز وبلاد
برجان لان تجار البحر يسافرون من المشرق الي المغرب ومن المغرب
الي المشرق فيحملون الديباچ والنخز الفايق من فرنجة الي فرما
ويركبون البحر الي القلزم فيحملون ذلك الي الصين ويحملون
الدارصيني والماميران ومتاع الصين كله حتى يصيرون بالقلزم
ثم يتحولون الي الفرما وهم التجار اليهود الذين يقال لهم الرهدانية
يتكلمون بالفارسية والرومية والعربية والافرنجية فيجيون الي انطاكية
ثم يصيرون الي الابلّة ثم الي الغداذ فاما تجار الصقالية فيحملون
جلود الثعالب وجلود النخز من اقصى صقلية فيجيون الي البحر
الرومي فيعشرهم صاحب الروم ثم يجيون في البحر الي صكوش
اليهود ثم يتحولون الي الصقالية ثم ياخذون من بحر الصقالية حتي
يجييون الي خليج النخز فيعشرهم صاحب النخز ثم يصيرون الي
البحر النخراساني في هذا النهر الذي يقال له نهر الصقالية فربما
خرجوا بجرجان فباعوا جميع ما معهم فيقع جميع ذلك الي الري
واعجب من هذا انها فرضة الدنيا

Translation.

“ *Ray*.—This town is the centre of the commerce of Armenia, Azerbaijan, Khorassan, Khazar, and the country of Borjan. The sea merchants sail from East to West, and again from West to East, and they export brocade and a superior sort of beaver from the country of the Franks to Ferma by sea, (from Ferma they go by land,) to the Red Sea and take their wares by sea to China, from China they export cinnamon, mamyrán, and all sorts of China goods. These they bring to the town of Kolzom, whence they transport them by land to Ferma.

“ The merchants of whom we are speaking are Jews, and are called Rodhanians. They speak Persian, Rumish, Arabic and Frankish, (i. e. a dialect of German,) they come (by sea) to Antioch, thence they go to Bagdad and thence to Obollah.

“ The Slavonian merchants deal in fox and beaver skins (fur,) which they bring from their most distant countries to the Rumish sea, where they pay custom to the Greek Emperor. Then they proceed by sea to Samkúsh, who is a Jew, then they go (by land) to the country of the Slavonians; then they sail on the Slavonian sea till they come to the Gulf of the Khazars, where they have to pay custom to the Khazar king. Then they sail on the sea of Khorassan, and ply on the river which is called the Slavonian river; sometimes they go on shore in Jorjan and sell off. All these wares come to Ray, which is the market of the world.”*

* The latter part of this passage is very confused and corrupted, but it may easily be corrected from the passage of Ibn Khordadbeh.

Besides Ray, the town of Jyroft in Kerman, two days' journey from Sirjar and four days from Hormuz, was a great place for commerce, in which the caravans of Sijistan and Khorassan used to meet. (*Ibn Haukal MS. of the Bodleian Library.*)

(To be continued.)

Route from Derá Ghazee Khan to Candakar, through the Sakhee Sarwar Pass and Buzdar, with other routes. By Major R. LEECH.

Derá Gházee Khán.—Charratta 9 miles, 200 houses, 2 wells, 6½ miles from Derá Gházee Khán, the Sharga canal crosses the road. It is thrown off by the river 9 miles above at Gurmanee, and waters the country 5 miles below at Págá; at a mile further the Mániká canal crosses the road. It is thrown off by the river at a place called Chainwállá, 27 miles above, and extends 25 miles to the South to a place called Hawair.

Wador, through } 9 miles, 400 houses, 1 well 112 feet deep.
brushwood.

↳ Pakhee Sarwar, a } 18 miles, { A large village { Water brought
stony road. { and a mausoleum. { from a spring in
the mountains 5
miles distant.

Siree, 14 miles through an uninhabited road, a desolate fort, a fine stream; the Pass commences 4 miles out of Sakhee Sarwar by a steep descent; it then runs through a ravine, whose bed is covered with large stones. It is commanded by the steep faces of the hill. The mountains have been deserted on account of the frequent attacks of these mountaineers; viz. Jetá Omalánee and Biddá Amadánee; both however under the command of Jalá|Khán Logháree.

Ascent of the Sulliman range (Kalee Koh,) at a place called Ootpalana, or camel saddle: some say from the shape of the hill: some say from the steepness which causes even a saddle to fall off in the ascent.

This is a zig-zag road for horses and camels, the face of the mountain covered with loose stones that each shower brings down. There is an easier road to the south that goes to Racknee, but not for a moment to be reckoned a gun road.

A table of 5 miles, and } 10 miles. { 40 reed huts of }
a descent of the same } { Lánjánee Kathryáns }
to a place called Rack- } { under Ameer Hajee } A rivulet.
nee. } { Khan of Darazoo Kote. }

The gun road from the Deráját to Rackee enters the mountains from Sangad, and is as follows:—

Sangad, commencement of the Pass.

Fort of Koh, 16 miles, 50 houses of Jaths, a stream and valley.

Lodr-wád, 14 miles, scattered huts of Buzdars }
of the Báckaree clan, under Pandee. { The above stream.

Ambar, 13 miles, a granary of the Buzdars } Ditto ditto.
and Sadhwánees in caves.

Manjawal, 14 miles, uncertain habitations of } Ditto ditto.
Buzdar shepherds.

Rackee, 12 miles, a good gun road. From Sangad to Candahar is a gun road.

There are quantities of grain, wheat, rice, and barley in Ambar, Darázoo in Bárackam, Chotyáley, Tal Dukkeede ; in fact on the whole road, water is plentiful as well as firewood, except at Bagháó and Smalan.

There are sheep to be procured along the whole road. Camels are procurable at Tal Bárackam, Kholloo and Pishing ; the inhabitants are quiet.

Racknee.

Darázoo-ká-Kot, the residence of Hajee Khán and 40 Kathryans. } 20 miles. { A large village of 600 houses. { A stream from Kholoo called Han, as well as rain water.

Kooh, the head of Han stream. } 5 miles. { No habitation, except in the neighbourhood, which is inhabited by Kathryans.

A difficult steep narrow ascent and descent. Nika-panee 12 miles ; no habitations, sufficient water for drinking.

Fort of Dost Mahomed Khán, a level road from the former stage. } 5 miles, { 200 houses of Zarkán Patháns. } Rain water in wells.

Fort of Fazul Khán.... 1 mile, { 100 houses, ditto } Ditto ditto.
ditto. { ditto.

Ditto ditto, Aly Khan, 1 mile, 100 ditto ditto. Ditto ditto.

Chotyály over hills, }
passable to camels } 36 miles.
and horses.

There is no water to be met with on the road, except in most inconsiderable quantities and uncertain places, which however, when found, is too salt to drink.

The remaining gun road from Racknee to Candahar is as follows :—
Racknee.

Chobará, . . { 4 miles, { 200 houses of Ishyanee Kathryans under Mahar and Dakoo Malaks. } A rivulet, as well as water in tanks.

Darázoo Kót, 16 miles, before described.
Kooh, the head of } 5 miles, before described.
the Han stream,

For Chapper, or black hill, not to be passed,	10 miles,	{ No habitation, a rivulet.	{ The road level, a slight ascent; soap stone met with.
Bálá Dákai, a hill which is turned, the road leading through the bed of the stream.	8 miles,	{ No fixed habitations; sometimes come here for a few months.	
Lwang, or ford knee deep. The stream called Hanokee.	6 miles,	{ no habitations.	
Palyáne,	14 miles,	{ 20 habitations of Zarkan Pathans under Sahab Khan, who is under Fazla Khan of Kholoo.	
Chotyaly,	12 miles,	{ 400 houses of Tareens under Biland Khan. ... }	{ Water from Barie.
Sobhá Khán's fort,	1½ mile,	{ 200 houses of Usturyanees, ... }	{ The former rivulet.
Tal, famous for wheat which is produced to a great extent, ... }	12½ miles,	{ 700 houses of Tareens under Sobhá Khan, Faizullá Khan, Hazár Khán, Abdullá Khán, and Baboo Khan, ... }	{ Ditto ditto and tanks.
Dukkee or Rah,	1¼ miles,	{ 400 houses of Tareens under Gul Raz,	{ Water from Bagháó, plentiful cultivation.
Bagháó,	10 miles,	{ 600 houses of Dhumad Kákads, under Hasam Khán and Peraz Khan.	{ A stream rises here.
Sinzávee,	7 miles,	{ 300 houses of Dhumads, ... }	{ A spring of water.
Chinjan,	11 miles,	{ Uninhabited; in the neighbourhood are Zikbpel Dhumads, ... }	{ A stream, from which a few acres are cultivated.
Chadee,	11 miles,	{ A few houses of Sanatyá Kakads, ... }	{ A stream, in the bed of which the road runs.
Karez,	8 miles,	{ 300 houses of Sanatyá Kakads, ... }	{ Spring of water.
Ingand,	9 miles,	{ 60 houses of Sanatyá Kakads, .. }	{ Sets of springs.
Bazar in the valley of Pishing, }	13 miles,	{ 30 houses of Battezai Tareens, under Paidá Khan, ... }	{ The river of Surkláb.

Gulistan Karez, sixteen miles, before described. This road is a gun road. Hájee Khán Kakad brought two guns with him from Candahar,

and engaged the Tareens of Tal. Hajee Khán could secure protection, he said to an army passing by this road.

No. 2.

The road of Rod Bahár, from Beebee Nanee in the Bolan Pass to Kalát.

Beebee Nanee Jam and Baradee, twelve miles, 100 houses of Puj Beloches; they do not pay tribute to Mehrab Khan, and are generally employed in guarding caravans through the Pass of Bolan. The water is in mountain springs. Rice, wheat, barley and juwaree are cultivated here, and there are gardens of mulberries, apricots, peaches and grapes. Indeed, the fertility of this road may be inferred from its name, Rod Bahar, signifying the valley of spring. From Beebee Nanee, the first six miles is in a plain. The road then enters the Pass, which is 150 yards wide, in which a half-hid stream runs; the two villages of Jam and Baradee are off the road, on an elevated plateau; the next stage is Zer-i-Kotal, "foot of Pass," a distance of twenty miles. There are no habitations here, nor on the road. The stream at the stage is plentiful. After leaving Jam Baradee, the valley opens out to the breadth of three miles, in which the tamarisk tree forms a jungle, and in which plain the water is lost. The Pass is then formed again, and the water again appears at four miles distant from the foot of the Pass. The stage is level; on the top of the Pass three-quarters of a mile from the bottom are the ruins of an old town, the streets of which are still to be traced, and several sunken spots denote the site of wells or reservoirs. The natives have searched in vain for old coins. The city is said to have belonged to Giours, (Greeks?)

The road from the old town then descends a little, again ascends, and finally has a considerable descent, and takes a level nature, and a third descent to Sar-i-Deh. A collection of wild fig trees, and water in stagnant pools, a distance of eighteen miles; this stage goes by the name of Rod Bahar; it is supplied throughout its length with water, and is cultivated in patches of wheat, rice and juwáree; peaches, apricots, mulberries, &c. also abound in small gardens. In this stage there are about 400 houses of Puj Mughandovee and Kulovee Brahins, who are cultivators. Firewood is plentiful. The next stage is Irar-mookh, four miles, inhabited in the summer by Brahins shepherds; viz. Ladies, Jatooees and Kulooees, to the amount of 150 tents. The

water is in three wells, and the cultivation depends on the rain. This stage is out of the Pass. Narmookh is in a plain which is divided from the plain of Takht by a projecting range of hills. From Narmookh, the next stage is Takht, fourteen miles, inhabited only in the summer months by wandering shepherds. If rain falls, water will be found at Takht; the next stage is Johan, fifteen miles, a fort containing 80 houses of Johanees under Katar Dad, the son of Sáhab Khán Jobánee. The water here is in a running stream.

Rice and wheat are cultivated to some extent, and there are a few gardens. The next stage is Kishán, twelve miles, containing 10 houses under Jangee Kishanee.

The water is in a running stream; rice and wheat are cultivated to some extent, and there are a few gardens and cultivation.

Kalat is thence 15 miles.

This road is passable to cavalry and camels, but by no means to guns. Snow does not fall in the Pass, its boundary being Narmookh, (Narmool of maps.) The inhabitants begin to emigrate to Catchee (Cutch Gundava,) by the middle of September, some on account of the cold, others on account of the scarcity of grass for their flocks, and the remaining cannot stay behind, as they would be too weak to withstand the plundering attacks of the Dhumad Kakads.

The heaviest falls of snow in Kalat do not cover the ground knee-deep, and it never remains on the ground for more than seven days. Snow begins to fall in the beginning of December, and lasts to the end of February.

When the inhabitants of Rodbar emigrate to Cutchee, they first bury their grain, and cover it very artfully, so as to escape observation. The inhabitants return to Rod-Bahár by the end of March. Wheat is sown in the end of August, and reaped in the beginning of April. Rice or the rubbee crop is sown in the middle of May, and reaped in the middle of September.

There is grazing ground on the mountains for flocks during March, April and May, and forage for horses might be procured; during May the wheat stalks could be given to horses, and as long as it lasted.

No. 3.

Road from Manziljah at the entrance of the Bolan Pass to Kalat Manziljah in the Dasht Khurd, or small plain, called Bedoulat; there are

no habitations here, neither is there water. It is said, however, to have been brought by Meer Naser Khan, Brahín chief of Kalat, from Zada-khoo, a spring ten miles to the north, by means of a small duct to furnish the army of Ahmed Sháh Duranee. From Manziljah to Marow is ten miles, over a level road having only one slight hill. This village contains 500 houses of Koodds, under Sardar Alá Dinna. There is plenty of good spring water; wheat and juwaree are plentifully cultivated. From Marow to Isplinjee is ten miles over a level road. The water is in springs; the village contains 500 houses of Bangulzains, Brahíns under Noor Mahommed Wadera, (Patel.) From Isplinjee to Koohak is sixteen miles over a level road, the water is in wells, the village is only inhabited in the summer, as are the other villages on the road to the extent of six hundred houses of Bangulzais or Badoozaís, who pay taxes to the Mahommed Shahees, the owners of the soil.

From Koohak to Gazah, a set of worked springs in the district of Mangochur, twenty-four miles, a level road having no water or habitations on the way.

Mangochur is three miles distant to the right. It contains 2,000 houses of Langaus. It is under Kalat. From Gazah to Karez (spring) of Giranee is ten miles. There is a spring called Shireenah, four miles from Gazah. The road is level. Karez-i-Giranee contains in the winter 30 habitations, and in summer two hundred of mixed Brahín tribes; the water here is remarkably good, compared with that of Kalat. From Karez-i-Giranee to Kalat is eight miles. The last three miles being through fields and gardens.

No. 4.

Road from Kot (Kwettah of maps,) to Kalat from my Journal.

18th June, 1838.—Left Kot, the road passing between two hills, and reached Saryab, a distance of seven miles. There are no habitations here. The water is in worked springs, in which are a quantity of fish. This is an extremely cold place in winter. A report prevails, that two caravans, one of indigo and one of madder, proceeding to Hindustan were caught in a fall of snow, the madder merchant offered to burn his madder if the other would share the cost. The indigo merchant refused, encamped at a distance, and perished in the night from the cold.

19th June.—Passing a hill at four miles from Saryab entered a plain, and keeping along the skirt of the hills to the left, to avoid the deep

rugged "nullas" that cut up the lower plain, reached Pilingabad, a further distance of 8 miles. The town of Teeree is in the neighbourhood. Pilingabad contains about 300 houses of Affghans, and is surrounded by fine gardens of apricots, almonds, mulberries and grapes. The former grow to the height of English elm-trees, and the vines are trained up them.

21st June.—Marched four miles and a half to Mastung, a walled town, situated in a wilderness of gardens. It contains about 3,500 houses, and a Naib, or governor, on the part of Mehrab Khan, generally resides here. Mastung is famous for its melons. The inhabitants in the neighbourhood are Mashwanees and Sangoos, and a sprinkling of the different other tribes of Sarawan Brahmes. The seasons of Mastung are twenty days in advance of those of Kalat.

The direct road from Mastoony to Kalat, is then viâ Mangochas as follows :—

Mastoong Cha (well of Guroo situated in the kad vale of Mastoong.)	} 12 miles,	{ No habitations. The road is perfectly level.

Mungochar, 16 miles, before described.

This road is only chosen when express is required, on account of the distances between the watering places.

The other road, the same by which I travelled, is as follows :—

26th June.—Left Mastung and marched by the round about road to Kalat, halted at Shireenab, no habitations. The water is in worked springs, and salt to the taste. The distance is twelve miles. The neighbourhood abounds in hares.

27th June.—Marched seven miles to Karez (worked springs,) of Dost Mahomed. The road running through a valley ; thirty habitations ; some cultivation.

28th June.—Marched nine miles to the Zyarat (Mausoleum) of Zard, twenty houses inhabited, and the like number in ruins. At a half mile in front is a garden, the fruit of which was this year destroyed by a blight.

29th June.—Marched eight miles to Sar-i-Karez ; no habitations except twelve in ruins, a small stream. Mangochar was visible to the left.

30th June.—Marched sixteen miles to Zyarat, a village containing 200 houses. Mehrab Khan's stud is stationed here.

1st July.—Marched four miles to Kalat. This road is a gun road throughout.

No. 23.

Route from Dadur to Sukkur via Shikarpoor, Quarter Master General's Office, Camp at Larkhana, 23rd December, 1839.

Stages.	Distance.		Remarks.
	Miles.	Fur. longs.	
Dadur.			
Nowsherra, ..	7	4	Vide route from Gundava to Dadur.
Myhysir, ..	15	3	At nine miles cross a deep nulla from Nowsherra, with little water in it, but muddy road; good water in a nulla South-west of the village. Myhysir contains about 200 houses and 10 shops, plenty of forage for camels, and kirby for horses; encampment on the North-east of the village.
Bhag,	14	6	In this march cross six nullas, one of which has water in it, road good, and cultivation of juwaree in the vicinity of this place; water bad, and from a tank filled in by the fall of rain. Bhag is a large place, with plenty of supplies, it contains about 2,000 houses and 100 shops, forage for camels in the vicinity of this town, and kirby for horses; juwarree fields all the way from last stage; encamping ground on the East of the village.
Kassim-ka-joke,	20	6	Cross five nullas in this march, one of which runs on the left of the road with pools of water in it, road good, with cultivation of juwarree on both sides at some places. This village is small, with 75 houses and 8 shops; supplies limited, plenty of forage for camels, at one mile from the village, and kirby for horses; encamping ground South-west of the village.
Kunda, ..	15	7	In this march cross five nullas, with one running on the left of the road, as before; road a foot-path, and bad cultivated fields of juwarree on both sides of the road. Kunda is a small but good village, with about 200 houses and 30 shops; water in a nulla on the left of the village till the end of February, when it could be had by digging in the bed of the nulla; plenty of forage for camels and kirby for horses; encamping ground South-west of the village.
Carried forward, ..	74	2	

Stages.	Distance.		Remarks.
	Miles.	Fur- longs.	
Bro. forward,	74	2	At five miles three furlongs pass the village of Roree, where the guns were halted, and from whence desert of twenty-six miles is crossed ; road good on a plain all the way. Rojan is a poor village, with few huts, water bad, and in three wells built of burnt brick, no supplies of forage for camels and kirby for horses ; en- camping ground South-east of the village.
Rojan,	35	3	
Janeederrah, .	11	2	Road good from the last march. Janeeder- rah is a small ghurry, in which Commissariat supplies are stored and guarded by a party of infantry from Shikarpoor. This village is de- serted ; water in five wells, two of which are now dry ; sufficient forage for camels and kirby for horses, supplies very limited ; en- camping ground on the East of the village.
Jagghan, ..	11	5	In this march pass four dry nullas, road good. Jagghan is a small village with 60 houses and few shops, water from five kutchha wells, forage for camels in abundance, and kirby for horses, supplies very limited ; encamping ground on the South-east of the village.
Shikarpoor, ..	12	2	Road good, through thick jungle ; having no nullas to cross in this march. Shikarpoor is a large town, with considerable supplies and population ; encamping ground on the South- east of the town, where there are several wells.
Kheahyee, ..	14	7	In this march cross eight dry nullas, road good through jungle. Kheahyee is a small village with about 100 houses and 8 shops, supplies few, water from two pucka and ten cutcha wells ; plenty of forage for camels and kirby for horses ; encamping ground on the South-east of the village.
Sukkur... ..	13	3	Cross 17 nullas in this march, road good, but through thin jungle. At seven miles on the left of it, the river Indus is met, and on the right bank of which Sukkur is situated. It is the Head Quarters of the Brigade in Upper Scinde.
Total,	173	0	

(Signed) NIEL CAMPBELL, Major,
Acting Quarter Master General.

No. 24.

*Route from Sukkur to Larkhanah, Quarter Master General's Office, Camp
at Larkhana, 23rd December, 1839.*

Stages.	Distance.		Remarks.
	Miles.	Fur- longs.	
Camp Sukkur. Bangudjee, ..	10	0	In this march pass four dry nullas, road a foot-path, but good through thin jungle ; 10 houses and 1 shop, water from the Indus, and encamping ground on the bank of it ; plenty of forage for camels and kirby for horses.
Shaleanee, ..	8	2	Pass eight dry nullas in this march, road a foot-path through thin jungle, and leading through the bank of the river ; 20 houses and 4 shops, river water, and encamping ground on the bank of the Indus ; plenty of forage for camels and kirby for horses.
Muddehjee, ..	9	5	Pass seven dry nullas in this march, road a foot-path through thin jungle, leaving the river at about three miles from the last stage. About 150 houses and 20 shops, water from six pukka wells, supplies plentiful ; encamp- ing ground on the South-west of the village. Lots of forage for camels and kirby for horses.
Nowaderah, ..	9	4	In this march pass seven dry nullas, road a foot-path, through jungle. About 100 houses and 8 or 10 shops, water from four or five pukka wells. The river is left about three miles from this place ; supplies plenty ; en- camping on the N. W. of the village ; forage for camels and kirby for horses.
Larkhanah, ..	12	3	Cross nine dry nullas in this march, road good through thick jungle.
Total, ..	49	6	Larkhana is a large town with abundance of supplies.

(Signed) N. CAMPBELL, *Major,*
Acting Quarter Master General.

No. 25.

Route from Kotree and Gundava to Sukkur on the Indus, Quarter Master General's Office, 19th December, 1839.

Stages.	Distance.		Remarks.
	Miles.	Fur- longs.	
Kotree, . . . .	...	..	Vide route No. — from Larkhana to Dadur.
Gundava,	7	0	Ditto ditto.
Oodauna,	14	7	A walled village with considerable cultivation around, water from cutcha wells, outside; at this time scarce and insufficient for a small force. The road good, over a level desert plain, crossing a large canal at six miles, twenty yards broad and fifteen feet deep, with steep banks; cultivation commences at one mile from Oodauna. Forage abundant, supplies few.
Kunda, ..	10	4½	A large walled town, water in canals but indifferent, much cultivation and several other villages around, at a distance of from one to three miles. Road over a level country, but more bushy, passing one village on the right at three miles and the ruins of old Oodauna, with some cutcha wells, and two or three large villages on left, at seven miles. Supplies plentiful at Kunda.
Burshooree, ..	9	2	Two walled villages, with considerable cultivation around, on the edge of the Runn desert; water from small cutcha wells, road good all the way, and for the first two and a half miles through cultivation, then a desert plain until within one and a quarter mile of Burshooree. Forage abundant, but few supplies.
Rojan,	26	0	Two walled villages on the eastern side of the Runn, or desert, with a little cultivation, and one good pukka well. The road over the Runn is very good. Parties with laden cattle should march just so late in the evening, as to arrive across it by day-light. Forage abundant, few supplies.
Jancedera, ..	11	2	A large square fort and a village, the village at present in ruins, having been
Car. forward,	78	7½	destroyed some time ago, by a plundering

Stages.		Distances.		Remarks.
		Miles.	Fur- longs.	
Brought forward,		78	7½	band of Beloochees. There is considerable cultivation around, and some of the population scattered in huts in the fields. There are four good pukka wells, one of which is inside the fort. Khangaum, a large and populous place, is about four miles to the northward, at present an out-post from Shikarpore, road good, except at the 9th mile where it is deep in sand. Forage plentiful and some supplies.
Jaghan,		11	4½	A fort and village with some lofty square fortified buildings, outside, considerable cultivation and some good pukka wells. The road is over a level but more woody country, passing two or three villages on the right and left. Jaghan has a small but good bazar, with considerable supplies, and forage plentiful.
Shikarpoor, ...		13	4	A large town or city, the capital of Upper Scinde, with extensive bazars and abundant supplies. A large fort on the east side of the town, the buildings are in general lofty, the country around an extensive level, bushy plain, with much cultivation; water plentiful from wells. Road good, over a level, but very bushy or jungly country.
Kahee,		14	½	A large village, and also much cultivation. The road winds a good deal over a level, but very bushy or jungly country, with many fine clumps of trees, and several villages at a distance from the road.
Sukkur,		12	6	To the bank of the Indus river near the flying bridge to Bukkur Killa. The road from Kahee is in general good, but crosses about 10 water-courses or nullas, all at present dry. Pass Thoomanee at 1½ mile on right. Rubail on left, at 2½. Durraha at 5½, and Soomar at 6½; both on right. Jaffrabad at 7½ right; Nusseerabad at 7½ on left; and Abad at 9½, all small villages, with many trees, and considerable cultivation about them.
Total, ...		130	6½	

(Signed) N. CAMPBELL, Major,
Acting Quarter Master General.

No. 26.

*Route from Shikarpoor to Larkhana, Quarter Master General's Office,
Camp Sukkur, 15th January, 1840.*

Stages.	Distances.		Remarks.
	Miles.	Fur- longs.	
Shikarpoor.			
Samun Kote, .	4	2½	A small village ; about 10 houses and 2 shops ; water from two wells.
Nowser, . . .	3	2½	Ditto ; 30 houses and 6 shops, supplies limited ; water from two cutcha wells.
Kamboowa, . .	1	5	This village contains about 20 houses and 1 shop ; water of wells.
Khairr, . . .	..	6½	This is a good village, of about 50 houses and 7 shops ; water of wells in the village.
Gahay-ja, . .	4	3½	A good village containing about 100 houses and 12 shops ; water of wells.
Bungool			Ditto ditto ; 40 houses, 7 shops and
Dehra	2	6½	1 well.
Rambut			
Poorá,	6	3	Ditto, ditto ; 40 ditto, 3 ditto ditto.
Rahooja,	1	1½	A deserted village.
Nowadehra, .	2	7	A large town, abundant supplies. This village has about 100 houses and 10 or 12 shops ; forage for camels and kirby for horses abundant.
Larkhana, . .	12	3	
Total,	40	1	

(Signed) N. CAMPBELL, *Major,*
 Acting Quarter Master General.

No. 723 of 1840.

Secret Department.

To Major J. HOLLAND, Deputy Quarter Master General of the Army.

SIR,—I am directed to acknowledge the receipt of your letter dated the 18th ultimo, with a communication from Lieutenant Colonel

Campbell, Quarter Master General of the Army, forwarding a collection of plans and routes in Scinde and Afghanistan, collected and prepared by that officer, principally from his own surveys, and those of the Department under his charge, during the late campaign.

2. In reply, I am desired to state, that the Honorable the Governor in Council entirely concurs in the sentiments expressed by His Excellency the Commander-in-Chief, with regard to the highly creditable manner in which the whole of these maps and routes have been prepared.

3. I am further desired to request that the best thanks of Government may be communicated to Lieutenant Colonel Campbell, for the maps and routes in question, which form a very valuable and most acceptable addition to the knowledge which had previously been acquired by Government of the countries recently traversed by the British Army, and that that officer may, at the same time be informed, that the Governor in Council will have much pleasure in bringing the same to the special notice of the Government of India and of the Home Authorities.

4. I am desired to return the maps and routes for the purpose stated in the 3d para. of your letter, and to request, that when a general map of the nature therein alluded to, has been compiled, a copy thereof may be sent to the Political Department, and that the plans may be returned to Government, in order that copies of them may be made and forwarded to the Government of India, and the originals afterwards transmitted to the Honorable the Court of Directors.

I have the honor to be, &c.

(Signed) L. R. REID,
Chief Secretary to Government.

Bombay Castle, 4th May, 1840.

No. 17.

Route from Guznee to Derah Ismail Khan.

Stages.	Coss.	Remarks.
Guznee,		
Sheloghur,... ..	6	A village, road good, water from a karez.
Wusta Joga,	5	A small village, good road, water from a karez.
Punna,	5	Ditto ditto, water from a karez, road good.
Kakajun,... ..	5	„ „ good road, water from a karez.
Dund,	4	„ „ water from river, road good.
Zo-gun Shuhi,... ..	6	„ „ road indifferent, water from a karez.
Hund-gaee	5	No village, road as last stage, water from a mountain stream.
Surgo,	4	A small village, water from a mountain stream, road through hills.
Kalogur,	5	Ditto ditto, water from river, road indifferent.
Otman,... ..	4	No village, road bad, water from river.
Serae Mama Chular, ..	4	Ditto ditto, road as before, water from river.
Shedan,... ..	4	Ditto ditto, road indifferent, water from river.
Khír Dongur,	3	„ „ ditto ditto ditto.
Ahmed Shah Katch, ..	4	„ „ road and water as before.
Turpurneeaa	4	„ „ ditto ditto ditto.
Passuk,	3	„ „ ditto ditto ditto.
Ispan Pae Kat,	3	„ „ ditto ditto ditto.
Lemlakut,... ..	4	„ „ ditto ditto ditto.
Kata Raee,... ..	3	No village, road very bad, water from a mountain stream.
Postcut,	3	Ditto ditto, road as before, water from ditto.
Shaedan	3	„ „ road and water as before.
Dangulraee,	3	„ „ road very bad, water from ditto.
Rumoo,	3	No village, road very bad, water in abundance.
Nelae,	4	No village, road and water as before.
Jeraee,	3	„ „ ditto ditto ditto.
Cheirjagarain,	3	„ „ ditto ditto ditto.
Majgurra,... ..	4	A village, road good, water from a karez.

Stages.	Coss.	Remarks.
Soouk Deeval,	4	A village, road good, water from a karez.
Shumkool,	3	Ditto ditto ditto ditto.
Geraee Reman, ..	4	Ditto ditto ditto ditto.
Darabund,	4	A large town, water from a karez, road good.
Goondee Arim Khan,	4	Ditto ditto ditto ditto.
Metaee,	3	„ „ water and road good.
Dereh Ismael Khan,	7	A large town on the Indus.
Total,	136	

At least one month's supplies require to be carried along with an army, forage for horses and camels is abundant throughout. The road is represented to be easy for troops and carriage. The road at Kota Kae, and from Dangulraee to the foot of the ghaut at Maj-garra, will be found difficult for artillery.

*To Captain Alexander Burnes, on a Mission to Cabool, &c. &c. &c.
Loodhiana.*

SIR,—In obedience to the accompanying instructions received from Lieutenant Leech, I most respectfully beg to hand up a report on the great Pass of Bolan, examined and carefully drawn up in as plain and concise a manner as possible, and hope it will meet with your approbation.

I have the honor to be, &c.

Bhag, 22d August, 1838.

(Signed) JAMES NOCK,
Draftsman to Lieutenant Leech.

Report on the Great Bolan Pass. By JAMES NOCK, Draftsman to Lieutenant R. Leech, Bombay Engineers, Assistant on a Mission to Cabool, &c. &c. &c.

Every cafila from Khorassan destined to Cutchee, Shikarpoor, and Scinde, frequenting the Great Pass of Bolan, go through Shawl, and those from Mastung are generally composed of a body of men, waiting for the arrival of a cafila to Bolan, or of different tribes of Brahmin Baloochs,

emigrating from Kelat, and its subordinate places to Cutchee, in failure of rain to procure pasture for their flocks and cattle, and find means of subsistence by cultivation, in a more favored and watered country, near to their own.

2d.—The entrance to the Pass of Bolan does not show any striking appearance. From Mastung, leaving Feerungabad to the left, the road takes a direction N. E. 60° , meeting the hills at 3 coss, where there is an ascent and descent of $\frac{1}{2}$ coss, road not in any way difficult, composed of earth and small stones; thence Minguljah 9 coss, in a plain, and no water here. From Shawl to Siriab Hills 4 coss, and plenty of water, bearing N. E. 80° ; thence to Minguljah the halting place. Caravans and any body of men travelling from Mastung, should be careful in having a good supply of water for a 12 coss journey.

3d.—Leaving Minguljah to the commencement of the Pass is a distance of 3 coss back, bearing to Mastung S. W. 65° and to Shawl N. W. 100° . Having here reached the Pass, you meet an ascent and descent of 200 and 100 paces, a cross road from Murravee Spilingee and Kelat also join, a description of which also follows. Bolan then takes a 65° N. E.; the breadth between the hills or heights on both sides is about 200 yards, the sides and hills just near rise about 200 yards high, not accessible at its immediate part, but footmen can ascend from the parts round about; the places being exposed, the heights also are not so commanding as to obstruct the passage of a body of men; even cannon can be managed to be mounted on both sides. The road is a gradual descent, mixed with loose stones and earth, $\frac{1}{2}$ coss; one coss further on are to be seen three trees on the right side of the hill, where there is a spring, and water can be procured a mussuck-full at a time; thence $1\frac{1}{2}$ coss further, a path-way strikes apart from the road, to a place called Doosan, a watering place, and also leading to the resort of robbers, composed of Dhumad Kakads. $\frac{1}{4}$ a coss further on, is Doosan-ka-moo, where cafillas from Mastung and Shawl halt for a short time. Water is procured from $\frac{1}{2}$ a coss by a road or ravine running to the left to the above mentioned place; this place is better known by the name of Mamadgozee.

4th.—From Mamadgozee, or Doosan-ka-moo, the road takes a S. E. 100° direction, and narrows at the corners to 70 feet, and both

sides of the hill, after a sweeping space, meet at the distance of 150 yards, making a Pass of 50 or 60 feet breadth ; the heights are lofty, but accessible ; there are eight windings, measuring on the whole 1350 yards, the centre of the spaces between the windings is about 300 yards, bearing N. E. 20° to S. E. 170° . This place is called Seree Bolan, thence 60° N. E. 200 paces, the heights mingle with the hills, and the sides become a gradual slope from the hills ; thence $\frac{1}{4}$ mile distant is Mooch or Sir Kujoor ; springs of water, running stream, underneath ; breadth between the sides 600 feet, heights much exposed, and no difficulty of access, good road of loose stone and earth ; a fixed halting place of cafillas.

5th.—From Mooch or Sir Kujoor the direction is S. E. 120° , $\frac{1}{4}$ coss distant, the heights to about the right $\frac{1}{2}$ a coss, leaving but a bare bank to mark the road, to the left a running stream of water. This place is called Koolee ; thence S. E. 115° $\frac{1}{4}$ coss, Khakeedawoo a burial place, are to be seen, a great number of graves of those slain in protecting caravans against the Dhumad Kakads and Marees. To the left is also a date tree, and a chokee in ruins ; plenty of water. The road is rough and difficult from large loose stones, and the unevenness of the ground ; but a party of pioneers could soon remedy the evil, by removing the stones, and filling up the rough parts. S. E. 147° , $\frac{1}{2}$ a coss is Ahleegoom ; the water here disappears under-ground, and on that account gives name to the place. Road as above and the same remark, hills to the right, distant 3 coss, and left 8 coss, leaving an immense plain.

6th.—S. E. 155° , $2\frac{1}{2}$ coss road in a plain ; 1 coss to the right is Khujoorree ; 60 houses of Koochak and Pooshy Baloochs, and 2 coss further on is Jam and Barurdee, 80 houses of Koochak and Poosjh Baloochs ; thence S. E. 165° , 4 coss, road to Beebee Nannee. The hills near, again leaving an entrance of about 300 yards. A river of the same name runs here, two feet water, heights on both sides 300 and 400 feet high, accessible on all parts ; halting place of cafillas.

7th.—The hills again turn off on both sides, leaving a wide plain to traverse to Kirtah, 130° S. E. 6 coss. About $\frac{1}{4}$ of this road you meet a detached hill on a rising ground, and a passage of about 20 feet, called Tillowgheer, which place could be avoided by keeping to the left. Kirtah contains 40 houses of Koochak Baloochs under a chief named Futteh Khan, who murdered his nephew a few months back to secure

himself his possessions. A river runs here, three feet water, and it is a halting place of cafillas.

8th.—From Kirtah due south is Sang Soolah 3 coss, one of which is an ascent and descent, a passage of 200 yards between the hills, the heights are bare and exposed on all sides; crossed the river twice, also river Gundruff 250 feet wide and 3 feet water; the hills on both sides rise 150 and 250 feet, road not very difficult and 400 feet broad. 175° S. E. $2\frac{1}{2}$ coss, crossed the river three times, bed of the river rather rough from loose stones, 2 feet water and 200 yards wide. Due south $\frac{1}{4}$ coss is Kustáree Chirak, crossed river, road difficult as above, 400 feet wide. S. E. 125° , the road narrows to 150 feet, the heights easy of access, 100 and 150 feet high, 200 yards, ascent called Pas Pash; crossed river, 3 feet water. S. W. 150° , 250 yards in length, having crossed the river three times, 2 feet water; due south Kohn Dil, and crossed the river three times. Cafillas halt for awhile here to refresh, 200 yards.

N. E. 45° , 400 yards descent; the road is 600 feet broad, heights 150 and 200 feet high, accessible on all points. N. E. 35° , 200 yards ascent, place called Kohee Singh.

N. E. $45\frac{1}{2}$ coss Drubbee, halting place of cafillas, heights not in any way difficult of ascent, breadth of the road 200 feet.

Hence to the termination of the Pass S. E. 100° , 1 coss, the hills take a N. W. and S. W. direction, and the river towards Daddur $\frac{3}{4}$ of a coss South. Daddur from the mouth of Bolan is about 35° N. E. 3 coss distant on low ground, and on open plain.

The established cafilla march is from Mastung and Shawl to
Established cafilla, Minzulzah 12 coss; no water here except at Si-
marches in Bolan. riah, 3 coss from Shawl.

2nd Stage.—Next Mooch or Sir Kujjoor $9\frac{1}{2}$ coss, plenty of good water, and the road generally a gradual descent.

3rd Stage.—Hence Beebee Nannee, $7\frac{1}{2}$ coss, 6 of which no water to be found, arriving at Beebee Nannee plenty of water from river near.

4th Stage.—Hence Kirtah 6 coss, plenty of water from river.

5th Stage.—Drubbee, $8\frac{1}{2}$ coss, having to cross the river very often, and many ascents and descents.

6th Stage.—Daddur, 5 coss in Cutchee, making a distance in all of about 50 coss, every allowance for windings, &c.

On the whole, the passage through Bolan cannot be considered

very difficult. Between Mooch and Bebee Nannee you meet with a rough road for about 2 coss or so, and also on the way to Drubbee, which obstacle can be soon remedied by a body of Pioneers, in removing the stones and levelling the road. About Mamudgozee and Teree Bolan, the road is narrow, yet there is sufficient passage of 62 and 70 feet wide for a body of men; also the ascents and descents show but small impediments, the heights likewise on both sides are not commanding; and however defended, would produce little effect in opposing an army. Shah Shujah passed the road on to Candahar with 14 guns, 10 drawn by bullocks, 3 pairs to each gun, and four by horses, 2 pairs to each; and encountered little or no difficulty in the way.

This season, owing to the failure of rain, the depth of water in the River and depth of river did not exceed 3 feet, else at other times water; expedients resorted to by Shah Shujah in cases of great depth in passing the Bolan. at Pos Pash, there used to be 4 and 5 feet water, and a rapid running stream. Shah Shujah passed from Daddur to Drubbee and Kohee-Dil in the cold season, and on account of the depth of water being 4 feet in the passage, procured a great number of labourers, and levelled and dug the high grounds in the bed of the river, and causing the stream to run more freely, thereby obtaining a small depth of water to ford the river with his army and guns. A better gun road for artillery, cavalry and infantry can seldom be met with, and favourable under any circumstances to the passage of a large army.

At the entrance of the Pass, there is a cross road bounded by a good pass of sides 50 and 100 feet high, direction S. E. 120° $1\frac{1}{2}$ coss long, then a valley in the same direction 2 coss, also an ascent and descent of 2 coss over a mountain; very rough road, from huge stones. This part requires to be levelled, and the large stones blown up by gunpowder; thence S. W. 80° over a perfect plain 3 coss to Muravee; 500 houses of Koord Balooches under Ullahdeena, &c. 2 coss further on is Splingee; 700 houses of Bungulzaee Baloochs, under chiefs Noor Mahomed Wuddeia and Jan Mahomed; living on the produce of their lands. These two places is two stages distant from Kelat.

There are no habitations on the road to Bolan except at Kirtah, be-

Villages situated near the pass; leaders' names; number of inhabitants, &c. tween Mooch and Beebee Nannee. There are three villages, named Kujjooree of 60 permanent mud houses of Koochak, Pog, Pooshy and Mungundooee

Baloochs, situated 1 coss right of the road; and Jam and Barurree 2 coss right side of the road, and distant 3 coss from Kujjooree and Beebee Nannee, containing 80 houses of Koochak Poshy, Pog and Mungundooee Baloochs. The chief of Koochak, Poshy and Pog Balooches is Futteh Khan of Kirtah, and of Mungundooee Baloochs is Bhawul Khan, residing at Nurranoock and Rodhway, among the hills south of Bolan, about 7 coss distant. He has about 250 Mungundooee and Koolee Balooches under him, and Futteh Khan of Kirtah is the chief of 300 of the tribes above described, leading peaceable lives, and find subsistence by cultivation.

Round about the Pass of Bolan to the south are the Bolan Marrees, 350 in number, having no fixed habitation, and moving from place to place where pasture can be found for their cattle and

Number of tribe,
leaders' names; habits,
&c. living distant from
the Pass.

flocks. They are under Durreh Khan, Peeraz and Suttuk Khan, infesting the road and plundering cafillas and travellers. They are deadly foes to the

Hunanall Patans, living near the hills about Shawl, under Shurreef Khan and Sahebzadda, 450 in number, leading peaceable lives.

North of the Pass are the Hunnanal Patans mentioned above; next is the famous freebooter chief Shah Boojruk. He has about 600 Dhumad Kakads under him, all noted robbers, and a dread to cafillas and travellers, plundering where they can reside, at Largoongur 10 coss among the mountains; also 1000 Dhumah Kakads under Nasseer Khan, son of the late Secunder Khan, also living by plunder, and infesting the Pass. Their place of abode is Cohast and Gurmode, 12 coss N. W. of Beebee Nannee.

Azeem Khan Baroozee is the chief of 400 Punnee Patans. He resides at Sang among the hills, 8 coss from Kirtah; he has 5 cannon; he lately held the situation of Naib of Seewee. Sang is said to be a well-fortified fort, having high walls, and in a good state of preservation; these people lead quiet lives.

Baddra, under Sayud Khan Baroozee, contains 60 houses of Punnee Patans, situated 13 coss north-east of Kirtah, leading peaceable lives.

The Marrees, under Dodha of Kahan, 4000 in number, they are professed robbers, and infest the Pass. Kahan is situated about 20 coss from Daddur, among the hills. For the last year, they have not committed any depredations about the Pass. Mehrab Khan, it seems, has made

some arrangements with Dosha Kurnace, the residence of Pusund Khan, who is in the service of Kohn Dil Khan. He is also the chief of ten independent forts, consisting of 8000 inhabitants of Mukkeenna and Chilgurree Patans, living peaceable lives. These places are 10 and 15 coss N. E. from Daddur among the hills.

Seewee is about 7 coss east of Daddur, subject to Candahar : can muster 4000 men of Kujak Kakads, Punnee Patans and Seelaune Balooches.

The season of the year most unfavorable to cafilas, and to the movements of troops is from the latter end of July to the middle of September, during which time there are three or four falls of rain, which causes the river to swell for a few days, after which it subsides, and falls to its usual depth of 4 and 5 feet the farthest. This season for want of rain, the river has fallen so low as 1 and 2, in few places 3 feet.

During the day the weather is oppressively warm, and travellers experience great fatigue and suffering on that account ; and from what I have seen and felt, I would not advise travelling through Bolan in the hot months, except in cases of extreme necessity. The nights also are very hot. After leaving Mooch, shelter from the sun is not to be met with, especially for a large body of men.

Forage for cattle and other animals of burthen is got from the hills, near and round about Bolan : the plain also affords good grazing land, in an ordinary season of rain. The Pass itself, and its immediate vicinity, can find grass and forage for any number of cattle and horses, even in this season. If there be no rain and scarcity, grass is to be found about the parts along the road. The description of grass found about Bolan is similar to the hay given to horses in Hindostan ; and to camels and bullocks a peculiar shrub growing wild, called *stoomby* by the natives, and another called *trat*, considered strengthening, and a good substitute for camel thorn and leaves of trees.

Provisions and grain are not to be had in the Pass. An army passing ought to be particular in procuring a good supply for a seven days' journey at the least through the Pass, barley or jow for horses and mules, wheat for camels and bullocks.

Barley, wheat, jowaree, rice, doomba (or fat tailed sheep,) goats, &c. can be procured from the towns and places in Daddur and round about.

From Kirta, Jam and Bomoree, Kujjoree and Rodhbar, near the Pass, 2000 khauvas of rice can be procured. Hurnae, Cutchee, with Bhag and its subordinate places can furnish an army of 100,000 men, with a commissariat of provisions for many months; my informant tells me for years together.

Shah Shujah in one day obtained 1000 khauvas of wheat from See-wee as tribute.

Animals best adapted for carriage are camels for baggage, and horses for cannon; for tents and light burthen for quick passage, mules and yabboos would be preferable; bullocks also cannot be objected to even for cannon.

Animals of burthen
best adapted for the
passage of Bolan.

State of the Thermometer after leaving Kelat.

12th Augt. 1838.	{ 64 Morning, 90 Noon, 82 Sunset, }	Open plain of Mangochur and Koohuk.
13th Augt.	{ 64 Morning, 92 Noon, 88 Sunset, }	Road to Murravee, open plain.
14th Augt.	{ 64 Morning, 94 Noon, 88 Sunset, }	Muravee and road to Minzuljah, open plain.
15th Augt.	{ 70 Morning, 102 Noon, 94 Sunset, }	Minzuljah, Bolan, and Beebee Nannee, open plain.
16th Augt.	{ 84 Morning, 102 Noon, 94 Sunset, }	Beebee Nannee to Kirtah, open plain.
17th Augt.	{ 86 Morning, 102 Noon, 100 Sunset, }	Kirtah to Daddur or to Nowshera, open plain.
18th Augt.	{ 84 Morning, 100 Noon, 96 Sunset, }	Nowshera, in a close mud house.
19th Augt.	{ 84 Morning, 100 Noon, 96 Sunset, }	Nowshera, in a close mud house.

(Signed) JAMES NOCK.

Index to History of the Toorks. By BARON HAMMER VON PURGSTALL.

[The following is an abstract of the contents of Baron Hammer Von Purgstall's valuable History of the Toorks. It is translated from the original work in our Library by Dr. E. Roer, Librarian to the Society, and published by us as an Index which may guide the readers who may be in search of historical authorities to some which might otherwise escape them, as this excellent work is rare in India.—Eds.]

The Title of Baron de Hammer's Work is the following :

History of the Golden Horde in Kiptschak ; that is, of the Moguls in Russia, by Hammer Purgstall.

The work presents three divisions, the first of which contains the history itself in nine books. Each of these books is furnished with a title, while its contents are given on the margin.

The titles and contents of the books are as follow :—

First Book, (p. 1—33.)

On Kiptshak and its inhabitants previously to the invasion of the Moguls, especially on the Turks and their tribes. Contents: Plan of the work. Boundaries of Kiptschak. Kiptschaks the same with Patzinakites. Districts of Kiptschak. Its Towns and Inhabitants. The Turks. Turkish tribes in Kiptschak. Immigrations of a later period. East and West Turks. Turkish tribes. Continuation. The four principal Tribes. Customs of the Kiptschaks. Classes of the Tribes.

Second Book, (p. 33—94.)

On the Moguls, their national characteristics, first appearance (in history,) and on Tchengis Khan. Contents: The Moguls. Name of the Moguls. Description of them. Dschuwein's description. Muned Schimbasschis' description. Form of the body and dress.

Their houses, food, wives. Sport, weapons. Character. Origin (descent) of the Moguls. The family of Tchengis-Khan, Temudschin. Temudschin's exploits in war. Further exploits of Temudschin. Battle at the fountain. Baldochune (1202) expedition against the Naimans. (1203.) Tchengis-Khan's expeditions (1206.) Chinese war (1210.) The Shaho of the Chuarems. The blood-vesper and carnages. Buchara's carnage in Transozana. Chuarem's flight and death. (Silkide,) 10th February, 1221. Rebiul-achir, May, 1221. Redscheh, July 1222. Persian expedition. Expedition against Kiptschak. Rebral-achir, June,

1220. Seafer, April, 1222. Battle on the Kalka. Distribution of countries and appointments (officers.) Tchengis' death, 18th August, 1227.

Third Book, (p. 95—143.)

The reigns of Batu and of his two first successors. Contents: I. Batu. The two hordes, price of gold. Ogatas becomes Grand-Khan. Expedition against Kiptshak, 1223. Schewwal, 21st December, 1237. The burning of Moskan. Carnage at Waldimir. Tschermaghun's expedition against Persia. Reduction of Kiew and of some Volhynsan towns. The Moguls in Poland. Battle at Chmielik, 18th March, 1240. Battle of Liegnitz, 9th April, 1241. Invasion of Silesia and Moravia. The Moguls in Hungary. Battle on the Saj's. The conquests of Grosswardein, Perg and Gran. Expedition through Dalmatia and Croatia. The Moguls in Austria. The first Russian prince in the camp of the Moguls.

Kujuk becomes Khan. Mergku becomes Khan. Silkide, February 1251. Reign of the Moguls in Russia. The grand-prince Michael murdered 1246. Russian princes in Batu's camp. Distribution of the Mongolian army in Russia, Sertak, Ulaghdschi.

Fourth Book, (p. 144—181.)

The reigns of Berke. Contents: Berke. Warlike preparations, Schaaban, September 1254. Succession. Census. Burundai before Hatitech. Hulagu's expedition in Russia. Irbil's conquest. The empire of Rum divided. Battle against Arikbugha. Scheich Seiffeddin. Beheadings. The general of Noghai Berke. Expedition in Kiptshak. Division of the conquests. Halagu's death. Alaka becomes Khan. Russian princes in the camp. Kiptschak's relations to Asia Minor. Turkish colony in Dobrudscha. Tseddin's plan against the emperor. Berke's death.

Fifth Book, (p. 182—247.)

On the political institutions, that is, of the laws, religion, state of civilisation, finance, administration of justice, etiquette, dignitaries of court and officers of state of the Moguls.

Sixth Book, (p. 248—280.)

The reigns of Mengku Timur, Tudie Mengku, the Tetrarchia of Tulabuka, Skidschik, Alghui and Toghrul, and reign of Toktai to the accession of Usbeg.

Seventh Book, (p. 281—326.)

The reign of Usbeg, and expiration of the dynasty of the Blue horde.

Eighth Book, (p. 327—367.)

The reigns of Urus-Khan, his two sons, Tochtasmish Khan and the two invasions of Timur.

Ninth Book, (p. 368—412.)

The reigns of the Khans of the Golden horde, from the death of Tochtasmish Khan to its expiration.

Second Division, (Appendices.)

I. Extracts from the Menasirul-awalin of Aaschik.

II. The rain stone extracted from Mohammed B. Manosun's work on gems.

III. Invasions of Kiptschak by the Turks and Arabs, and expeditions of the Petscheneges and Polowzes, previously to the epoch of the Moguls.

List of the invasions from the commencement of the historic time, more complete than those in the Treatises of Sulm, Phumanr on the Kumans Polowzes, Tazyges, or in Schloezer's Chronicle of the Polowzes (in his history of the Germans in Transylvania) in Horvath's History of the Kumans, and in the Appendix on the Polowzes, as added to the instructions of Klaproth's Travels in the Kaukasus and in Georgia, p. 32.

IV. The poem of Purbeha Dschami, with the addition of fifty Mongolian words.

V. Thirty-six diploms of Mongolian state-officers, (from the collection of state papers of Mohammed Hinduschar.)

VI. Venetian Treaties, with Dehanibeg and Berdibeg.

VII. List of Russian families, descended from the Tartars.

VIII. List of the names of Russian princes who entered the Tartarian camp, and a list of fifty succeeding Mongolian rulers in Kiptschak.

IX. List of names of Tartarian ambassadors in Russia.

X. Division.

Critics given by three Russian academicians on this work, and the author's reply.

*A Grammar of the Cashmeeree Language. By Major R. LEBECH, C.B.
1st Assistant Governor General's Agent, N. W. P.*

(Concluded from p. 420.)

Adverbs of Time.

Az, to-day	Sulli, to-morrow morning
Yawa, yesterday	Kájis, at noon
Autra, day before yesterday	Sakale, in morning
Pagá ^h , to-morrow	Kuni-kuni, sometimes
Tami pagá ^h , day after to-morrow	Kaal uhyat, day after to-morrow
Pagá do ^h karit, ditto ditto	Duyami phiri, again
Parus, last year	Daadd, always
Yuhus, this year	Brinzaki pata, after an hour
Wuny, now	

Adverbs of Place.

Boaut, before	Kaut, where
Nibar, without	Yut, here
Path, after	Yati, hence
Andar, within	Hut, there
Thod, above	Ati, thence
Bou, below	Tout, there
Pyat, upon	Kun, toward
Tal, under	Tati, there
Kasheeri, to or from Cashmeer	Tatyuk, of there, (adj. m.)
Kati, whence	

Adverbs of Quantity.

Yoot, this much	Yootá dik, } whatever you give
Tyoot, that much	Tyootá nima, } I will take
Koot, how much	

Conjunctions, Interjections, &c.

Ta, and	Nah, no
Yá, or	(Chu na, is not)
Rats, without	Hato-ho, .. } holla
Sán, with	Hataho, .. }
Yudwai, if	Hatabá, .. } holla, brother
Yithai, even so, gratis	Hatasah, .. } holla, sir
Yina, .. {	Kami bápat, why
Yutna, .. {	Yut hyn, thus
Kits, .. {	Bei, moreover
Puits, .. {	Kyuth, how
Bápat, .. {	Kyázi, .. } why
Saati, .. {	Kouv khátra, .. }
Támat, .. {	Athuk, but
Tány, .. {	Youkanikyá, because, for
Há, .. {	
Hou, .. {	
Ada, .. {	

VOCABULARY OF NOUNS.

Substantives with their Genders, and some of their appropriate Adjectives.

Nab, <i>m.</i> sky	Thod, high	Sáf, clear
Zoon, <i>f.</i> moon	Ráts, fine	Kátsa, full
Aiyit, <i>m.</i> sun	Taut, hot	Prezalawur, shining
Tsándar, <i>m.</i> new moon		Zauyul, fine
Táruk, <i>m.</i> star		Prezalán, shining
Gruhun, <i>m.</i> eclipse of sun		Lagán, is taking place
Kroan, <i>m.</i> ditto of moon		Lagus, has taken place
Táp pyun, <i>m.</i> sunrise		
Mandul, <i>m.</i> halo		
Rood, <i>m.</i> rain	Satá, much	Vyut, heavy. [cotton
Sheen, <i>m.</i> snow		Pamba seera hisha, like flakes of
		Bhambari, like slates
Doat, <i>m.</i> hail	Satá, much	Sakht, heavy
Shishar gant, <i>f.</i> icicle		
Tilakatur, <i>m.</i> ice		Pishul, slippery
Lawah, <i>f.</i> dew		Adár, damp
Soor, <i>m.</i> frost		Toh hyu, like rice, husky
Trat, <i>f.</i> thunder-bolt		Band, large
Wuzmal, <i>f.</i> lightning		
Gagarárai, <i>f.</i> thunder		
Rájarám boodaryny doony, a rainbow		
Literally, Rájarám Bahádur's bow		
Wav, <i>m.</i> wind		Sakht, high
		Bánaháli hyund, like Bánahál's
Samoor, <i>m.</i> simoom		
Waharát, <i>f.</i> rainy season		
Harud, <i>m.</i> autumn		Rut, fine
Retakool, <i>m.</i> summer		
Wandu, <i>m.</i> winter		Sakht, severe
Joant, <i>m.</i> spring		Jwán, fine
Patr chhanin, falling leaves		
Bámun, budding of trees		
A whirlwind is said to be the devil looking after a lost piece of		[money
Mats, <i>f.</i> earth		
Bungul, <i>m.</i> earthquake		Yatá, slight
Bál, <i>m.</i>	Thod, high Tsut, low	Zyoot, long Rikhan, slippery
Parbah, <i>m.</i>		
Wan, <i>m.</i>		
Labur, <i>m.</i> a hillock		
Wudarr, <i>f.</i> table land		
Kamy, <i>f.</i> a stone, flat		Pharish, rough
Pal, <i>m.</i> a round large stone		Sakij, soft
Tuj, <i>f.</i> a clod of earth		

Dath, <i>f.</i> }	a large clod of earth	
Tral, <i>f.</i> }		
Rab, <i>f.</i> mud	Taing, thin	Mut, thick
Lats, <i>f.</i> dust	Gat, thick	
Nála, <i>m.</i> a defile	Tsaut, narrow	
Noar, <i>m.</i> —	Zyoot, long	
Garu, <i>m.</i> house	Rut-jwán, fine	
Jolahar, <i>f.</i> chimney	Kaij, roomy	
Tálou, <i>m.</i> roof		
Pathur, <i>m.</i> floor		
Kalai, <i>f.</i> a fort	Dair, strong	
Laur, <i>f.</i> a hut		
Look garu, a little house		
Koothir, <i>f.</i> a small room		
Kuth, <i>m.</i> a room		
Dálán, <i>m.</i> a hall	Koot, }	a beam
	Virám, }	
Tham, <i>m.</i> a post	Thamij, <i>f.</i> a small post	
Juat, <i>m.</i> }	a bund or dam	
Gand, <i>m.</i> }		
Khod, <i>m.</i> a pit	Seer, <i>f.</i> a brick	
Gop, <i>f.</i> a cave	Koanda, <i>f.</i> a kiln	
Zeena pauwur, <i>m.</i> flight of steps		
Kadul, <i>m.</i> bridge	Duas, <i>f.</i> wall.	
Thaut, a <i>m.</i> pier	Tsot, <i>m.</i> }	heap of ashes
	Buan, <i>m.</i> }	
Shahr, <i>m.</i> a city	Gám, <i>m.</i> village	
Gámapoor, <i>m.</i> a small village		
Burij, <i>m.</i> tower		
Nár, }	Fire, <i>m.</i>	
Aguin, }		
Ugun, }		
Tembar, <i>f.</i> a spark	Tongul, <i>m.</i> a coal	
Soor, <i>m.</i> ashes	Reh, <i>f.</i> a small flame	
Tainy, <i>f.</i> charcoal	Alav, <i>m.</i> a large flame	
Saait, <i>f.</i> wick	Duh, <i>m.</i> smoke	
Tár, <i>m.</i> lamp recess	Tsoeng, <i>m.</i> lamp	
Kángree, }	Zoowur, <i>f.</i> candlestick	
Kangur, }		
Sudur, <i>m.</i> the sea		
Kuol, <i>f.</i> a river	Taláv, <i>m.</i> tank	
Nag, <i>m.</i> a fountain	Nágará, <i>m.</i> mountain stream	
Jwai, <i>f.</i> a canal		
Dal, <i>m.</i> a lake	Kroor, <i>m.</i> a well	
Poany-woany-zal, water	Henur, a gutter	
Kala, <i>m.</i> }		
Heer, <i>f.</i> }	head. Baud, large; Dulomb, round	
Wod, <i>f.</i> }		

Tál, *f.* scalp.

Wáuk, *f.* a ringlet

Deka, *m.* forehead

Kan, *m.* ears

Acharwál, *m.* eyelashes

Daar, *f.* beard

Koad, *m.* brain

Buth, *m.* face

Wut, *m.* lip

Kaar, *f.* neck

Naar, *f.* veins

Achhnát, *f.* a wink

Goentsa, *f.* moustache

Hongainy, *f.* chin

Dand, *m.* tooth

Nakawoar, *m.* nostril

Aas, *m.* mouth

Mats, *f.* thick of arm

Athu, *m.* hand

Nam, *m.* nail

Kis, *f.* little finger

Bab, *f.* breast

Lar, *m.* side

Kamlear, *m.* back waist

Toon, *m.* navel

Zuk, —

Khad, —

Tsot, —

Kuath, *m.* knee

Tulupud, *m.* sole of foot

Khuratzund, *m.* big toe

Man, *m.* } heart

Wund, *m.*

Kernaniáz, liver

Tukawat, *f.* kidney

Gadood, *m.* mutton flesh

Zang, *f.* leg below knee

Nal, *m.* bone

Adij, *f.* bone

Pák, } *m.* matter

Pail.

Garwaul, married man

Garwájainy, married woman

Khatal, divorced woman

Maand, widow

Mast, *m.* hair

Vál, hairs, a hair

Bichur, forehead curl

Ach, *f.* eye

Buma, *f.* eyebrows

Yáwun, youth

Muh gand, *m.* cheek

Nast, *f.* nose

Hut, *m.* throat

Neuga, *f.* temple

Ashteant, *f.* a glance

Danda baer, *f.* gums

Kangoo, *m.* shoulder

Nair, *f.* below ditto

Anguj, *f.* finger

Nyat, *m.* thumb

Wach, *m.* chest

Kaainy, *f.* rib

Thar, *f.* } back

Trek, *f.*

Yad, *f.* stomach

Momar, } penis

Hyat,

Mandul, —

Pon, —

Tsenk, good

Bhoer, *m.* foot

Wáleenj, *f.* liver

Rat, *m.* blood

Tsam, skin

Khing, snot

Auhohur, a batchelor

Auharish, a maid

Harish muts, a bride

Maharaza, a bride groom

Mahariny, a bride	Kháwand, husband
Moal, father	Druí, husband's brother
Moaj, mother	Zám, ditto's sister
Khálah, } mother's sister	Hash, husband's mother
Más, }	Kolai, } wife
Másoo, husband of ditto	Ashiny, }
Pophoo, father's sister's husband	Nechu, son
Poph, father's sister	Son, rival wife
Mám, mother's brother	Sauj, wife's sister
Mámány, ditto's wife	Soalu, wife's brother
Koor, daughter	Chhauk, white
Nosh, son's wife	Kruhun, black
Hash, mother-in-law	Wozul, red
Kákany, }	Lider, yellow
Káka moaj, }	Mudur, sweet
Kakajee, }	Tsuk, sour
Bualjee, }	Tynt, bitter
Petan, father's brother	Bata, cooked rice
Pechany, ditto's wife	Gheu kulcha, ghee cake
Nány, }	Tsut, bread
Baij ded, }	Khatái, kind of bread
Badiamá, }	Machama, rice boiled with sugar
Buad bab, father's father	Busrak, a sugar puff
Jad, ditto's father	Syun, any cooked dish
Buid nány, } ditto's wife	Purát, a greasy cake
Jading, }	Doda wugr, rice and milk
Dadabab, foster father	Mund, a kind of oil cake
Dadamoaj, ditto mother	Doda mair, rice much diluted
Dodaboae, ditto brother	Khanda hákan, a sweetmeat
Dodaboae kakany, ditto's wife	Bhetsur, boiled rice with grain
Dadanány, wife of foster grand- father	mixed
Binye, sister	Denda, barley sugar
Boa,ee, brother	Firiny, blanc mange
Banthur, son of sister	Kand, loaf sugar
Bápathur, ditto brother	Jomul, raw rice
Násatur boae, son of bhálah	Khand, soft sugar
Másatur benyi, daughter of do.	Buzmut phal, parched grain of any kind
Pitur boae, son of amoo	Gor, molasses
Pophatur boae, son of pophoo	Dán li, parched rice
Popathur benyi, daughter of do.	Moraba, preserve
Mamatur boae, son of mám	Buzmut máz, fried meat
Mamatur beenyi, daughter of do.	Ras, gravy
Zur, daughter's daughter	Fulda, furmetty
Hihur, husband's father	Wishki kashaba, barley water
Mása hash, husband's mother's sister	Wugra, rice pudding
Roon, husband	Anjima, congee
	Wur bata, rice boiled dry

Dasit máz, minced meat
 Nábad, sugar candy
 Guash tába, mash meat
 Anchár, pickle
 Atha tsocha, dry pancake
 Thool, egg
 Bákar khány, pie crust
 Thoola mund, omelette
 Sheer mal, a kind of meat
 Buzmut thool, roasted egg
 Táftána, bread with oil
 Adoam, half roasted egg
 Tel kulcha, oil cake
 Syoomut thool, boiled egg
 Thula kaand, eggshell
 Thula haanyiny, yolk of egg
 Thula chatsar, white of egg
 Wushki wát, barley bruised and
 boiled
 Kabába, roast meat
 Tika tuji, skewered meat
 Wáza bata, rice bought from cook-
 ing shop
 Wáza syun, cooked meat ditto do.
 Mas, wine
 Cháh, tea
 Chut chái, } tea boiled with su-
 Moghal chái, } gar and spices
 Aum dod, raw milk
 Suhhabul, lukewarm
 Zaumut dod, curds
 Tsokyar, vinegar
 Guras, butter milk
 Zyal, cream
 Básmat, }
 Jyerzeen, } kinds of rice
 Sukdás, }
 Kátsa, red-hair, (or light colored)
 Khur, bald from disease
 Shaur, double-sighted
 Hithar, covered with white, blot-
 chy
 Yaid muras, dropsy
 Zanga tsot, amputated leg
 Kaij, dumb-woman
 Kaanz, rice water vinegar
 Zair, deaf-woman
 Gala band, a scald

Khanda koan, sunken eye, blind
 Theer koan, protruded ditto ditto
 Huny umut, gout
 Dáhalad, covered with dark blot-
 ches
 Tunda, handless
 Lárits, eunuch
 Leha loot, an abusive man
 Harámzoad, a scoundrel
 Zinálad, a whoremonger
 Apazyoar, a liar
 Byázur, a usurer
 Laud, inflicted with (a man)
 Laiz, ditto ditto (woman)
 Kala doad, a head-ache
 Nalwasun, swelled testicles
 Ukhung, pain of half-head
 Aush, a tear
 Kana pàk, ear-wax
 Shok, spittle.
 Phel, a large boil
 Phephur, a small boil
 Shitill, small pox
 Tamul, rice cleaned
 Dáiryer, rice uncleared
 Wieshka, barley
 Foony wushka, dog-barley
 Gogul, turnip
 Kremihák, cabbage
 Muj, radish
 Muli wany, radish tops
 Gazair, carrot
 Hand, endive
 Gásu, grass
 Dramun, short grass
 Kaund, a thorn
 Swai, nettle
 Poesh, a flower
 Kul, a tree
 Heeásmán, jasmine
 Kári haul, joy
 Krera ránt, wild grape
 Tang, a pear
 Tsoorit, apple
 Daan, pomegranate
 Taanj, wild pear
 Nyuk tsoorit, small apple
 Tal, mulberry

Tsunun, peach	Ninyamair, a deer
Aar, a sour plum	Roos, a musk deer
Thar, a bush	Háput, a bear
Badam, almond	Lu ^h , a fox
Doon, walnut	Shál, a jackal
Viring, a nut	Ramahoon, wolf
Phres, a poplar	Pádar su ^h , a tiger
Veer, a willow	Puriz, monkey
Dewana veer, } weeping willow	Wándur, an ape
Maits, . . . }	Dumb, a fat-tailed sheep
Traela, wild apple	Haund, a ram
Injara, a fig	Gaib, an ewe
Kapas, cotton	Tsáwul, a goat
Phohur, rough	Wuts, a calf
Pishhaul, smooth	Watsar, a heifer
Takur, hard	Soer, a hog
Mund, blunt	Haust, an elephant
Taut, hot	Woont, camel
Shuhul, cold	Haist kokur, elephant bird, turkey
Huk, dry	Broar, a cat
Adur, damp	Gagur, a rat
Záyul, fine	Woodur, a beaver
Poot, coarse	Packhin, a water fowl
Gub, heavy	Wankokur, a wild fowl
Lut, light	Ráza hoanz, an eagle
Zyoot, long	Jyagar pachhin, a roe
Tsut, short	Rata moghul, a "night mogul,"
Wechar, thick	owl
Taun, thin	Kautur, a pigeon
Thaud, high	Kakoo, partridge
Sun, deep	Titar, a small partridge
Dulám, round	Bàtur, a quail
Surug, cheap	Kav, a crow
Drug, dear	Jal, woodcock
Tikhán, quick	Didar, female of ditto
Lut, slow	Gánt, a vulture
Nyoor, near	Pauz, a hawk
Door, far	Katijh, a swallow
Mushak dár, odoriferous	Toata, a parrot
Phaka lad, offensive	Kautur, a sparrow
Look, small	Kaula toont, a fishing bird
Band, large	Bryag, a pelican
Nyool, green	Poampur, a moth
Pup, ripe	Zuts, a fire-fly
Aum, raw	Tila wányiny, a glow-worm
Rummut, cooked	Háloo, a locust
Su ^h , a lion	Khaha boat, grasshopper
Hungul, elk	Gáda, fishes

Gád, a fish	Solahar, cook-room
Baja gáda, large fish	Pash, roof
Chhatri, a kind of fish	Dabadul, wooden back to lean against
Gurun, ditto very small	Woegamur, trap door
Neecha gád, a kind of fish	Pacha, batten
Nadur, waterlily stalk	Burza, for leaf thatching
Goar, a water root	Dwári puat, leaf of window
Gool, the kernel of ditto	Panjra, shutter
Messa, a raw root	Toemb, a tent
Jeewar, a small water root	Barput, leaf of door
Pamposh, a waterlily	Srána kut, bathing room
Bumbi posh, ditto	Ganjuna, cupboard
Pamback, the cup of the lily	Tihhish, a shelf
Bumb, lily root	Pakhaan, a necessary
Sipp, .. } a shell	Hánhal, a chain
Hánginy, }	Puh, eye of chain
Hil, water weed	Tápadána, skylight
Kyoo, a root	Kulába, fire-place
Kream, a crocodile	Gund, log of wood
Zalgur, jack o'lantern	Thasa bar, creaking door, theft-pre-ventive
Vidri gád, a kind of fish	Boar, mud plaster
Kana wája, a ear-ring	Hurs mutz, white earth for plaster
Nasta waaj, a nose-ring	Wut, passage
Waaj, a ring	Deedhi, out-roomed
Anawat, a toe-ring	Wata laur, a traveller's serai
Bungree, a bracelet	Lari náv, accommodation boat
Aana waaj, a looking-glass-ring	Khoor, an oar
Haanzra, a necklace	Wáv wál, a sail
Lákam, a bridle	Dánga, kind of boat
Kalagee, head stall	Hasti náv, ditto
Kaathi, saddle	Paranda, ditto
Gál, mane	Hamatul, pole for pushing boat
Laut, tail	Vag, tracking rope
Daus, a wall	Náv, a boat
Boonthim águn, front yard	Shikaari, a fishing boat
Pathim águn, back yard	Bahats, a barge for merchandise
Haer, stone or mud-stairs	Ajdar, a dragon
Hachoo haer, a ladder	Gunnas, a kind of serpent
Bránda kaany, entrance steps	Buch, a scorpion
Bar, door	Sarp, snake
Koothur, a room	Puhur, a kind of viper
Garru, a house	Ryai, an ant
Dalan, a hall	Gúnuryai, a large ant
Doar, a window	Kana hápiny, earwig
Virama, flat beams	Duruk, a leech
Koothi, round rafter	Ama kyum, a tape worm
Dalon, ceiling	
Kányiny, terrace	

Khoela, a worm	Laar byoal, cucumber seeds
Dara hyum, a wood worm	Babaree byoal, sweet basil
Nool, a mungoose	Irmoghul, seed of flea wort
Kanka làt, lizard	Nást, snuff
Niny menduh, a frog	Tamák, tobacco
Paat hyum, silk worm	Aala, cardamums
Buma siny, a kind of worm	Kaung, saffron
Sangechoora, a kind of snake	Raung, cloves
Syai, a small black worm	Tul, oil
Kaad hyum, a flesh worm	Gyav, ghee
Dacha poampur, a worm in trees.	Handi byoal, endive seed.
Dàkur màz, mutton	Wada, frankincense
Paneer, cheese	Afeem, opium
Bad màz, beef	Zyur, zeera
Tsaman, fresh cheese	Yimlee, tamarinds
Phu, a kind of cheese	Jávend, bunhage
Sadámund gurus-pesh, thick but-	Sában, soap
ter-milk	Mánch, honey
Suan, gold	Syut, wax
Chaand, { silver	Bangu "bhung" zuris, barberries
Roph,... }	Tsandun, sandal
Tràm, copper	Asur, mustard
Shistur, iron	Tsera kránk, peach gum
Luà,i, brass	Lách, lac
Nàg, lead	Audur, ginger
Pulád, steel	Buhur, a druggist, (Hindoo)
Chats kàny, marble	Wadar pyul, satyrion
Nilawat, a kind of stone very hard	Pamba tsálun, china rhubarb
Pátur, a slab slate	Phula, soda, used in tea
Potaji, a slippery stone	Suz, potash
Kaing phal, a pebble	Púrud, quicksilver
Zakmak, a flint	Wai, galangal
Kájawat, stone used as pestle	Raunga tsing, a small clove
Waukul, mortar	Tsera naim, dried apricots
Grata, a mill	Yangu, asafoetida
Atha gratiny, a hand mill	Záfal, nutmeg
Shoant, ginger	Wari, dried curry cake of másh,
Lidàr, turmeric	onions, garlic, red pepper, car-
Martsa wángan, red pepper	damums, salt, ginger and tur-
Dágni wal, coriander seeds	meric
Gyav sheer, dragon's blood	Lekhawun, a writer
Manaz, henna	Mukeem, a shawl broker with
Marats, black pepper	whom merchants from foreign
Dárcheen, cinnamon	marts lodge
Shangar, liquorice	Wah fárosh, shawl itinerant bro-
Khizur, dates	ker
Bamstoont byoal, quince seeds	Boota lekhawan, pattern designer.
Ála byoal, pumpkin seeds	Wagivgaur, mat-maker

Kral, potter	Namdagaur, a felt-maker
Ruphgaur, shawl-darner	Káalcha woanawun, a carpet-maker
Topagaur, needle-worker of corners	Daub, washerman
Paatigaur, worker in silk	Chitta gaur, a chintz-maker
Topi suwawun, cap-maker	Laungi woanawun, a lungee-maker
Juraabi, } sock-maker	Kághaz gaur, a paper-maker
Jurábagaur, }	Janda sáts, a patch work tailor
Sats, a tailor	Araum, kitchen gardener
Doori woanawun, maker of breeches	Groost, a cultivator
ties	Kucha haanz, a rice cleaner of the Haanz tribe
Ashadgaur, an oculist	Demba haanz, a cultivator of floating lands
Dyára saráf, a money changer	Thaheer, a street minstrel
Jaráp, land surveyor	Grata woal, a miller
Thantaur, coppersmith	Phut gaur, a basket-maker
Khár, blacksmith	Kángul, a kángree-maker
Nailchigar, hookah pipe-maker	Bághwán, a gardener
Doon, cotton cleaner	Turka chhán, a turner
Wouwur, a weaver	Gátar woanawun, a ribbon-maker
Kándur, baker	Pooi woany, a woollen thread seller
Dándur, vegetable seller	Koad, cotton cleaner
Soudagur, fruit seller	Tsamar, shoemaker
Kraipák, confectioner	Wátul, a sweeper
Kháhauny gaur, knife grinder	Bautigaur, an innkeeper
Khanda wáv, shawl weaver	Tainhi gaur, a mint man
Aujar woany, } grocer	Mala khoash, } a grave digger
Houti woal, }	Gar mala, }
Kabába gaur, seller of cooked meat	Tsoor, a thief
Sazagar, a tire woman	Tsroal, a jailor
Guna woanawun, maker of hair clothes	Meerda, a police officer
Roza wutawun, rope-maker	Chanda tsoor, a pickpocket
Chhan, carpenter	Haist woal, an elephant keeper
Dusil, bricklayer	Bad, a mimick, (whence bauda jushna, a play)
Surawoal, a performer on the sitar, accompanied by the voice	Gaanz, a currier
Doolkiwoal, } a performer	Zinmazoor, woodcutter
Doolik waujiwun, } on drum with hand	Baipaar, a merchant
Surnoci, lute player	Goor, a dairy man
Soenur, goldsmith	Shahteer, a forerunner
Manur, lapidary	Oonta woal, a camel man
Mukhta tsurrachal, pearl arranger	Trangaree woainy, an itinerant grocer
Haanz, boatman	Puj, a sheep butcher
Gáda haanz, fisherman	Kasab, a beef-butcher
Rangaur, a dyer	Gupan roach, a herdsman
Mandangaur, a pattoo-maker	Pohul, a shepherd

Satsani gair, a needle-maker
 Charbadâr, a horse keeper
 Kannul, a labourer
 Purzun, ditto of low caste
 Wáreny, a midwife
 Wána raach, a shop-keeper
 Manzim goar, a marriage agent
 Manzim yáreny, ditto a woman
 Pheran, a shirt
 Poats, a cotton surtout
 Durmah, a thick pattoo
 Poambur, a single shawl
 Loonggi, a lungee
 Pajjama, breeches
 Koosh, high-heeled slippers
 Mauss, boots
 Atha trioon, gloves
 Chanda, a pocket
 Paizár, shoes
 Poots, a veil
 Naangil, a kind of shoes
 Karats, plaid
 Kijja koosh, high-heeled shoes
 Atha daij, handkerchief
 Shánda gund, pillow
 Kálcha, carpet
 Gabba, stuffed carpetting
 Wurun, any kind of coverlid
 Watharun, carpet of any kind
 Sataraand, woollen carpet
 Khaainy, blanket
 Satsan, needle
 Panadáv, a thread
 Jojir, a pipe

Hánkal, a chain
 Kránjul, a basket
 Shrák, knife
 Cháhi patala, a vessel for boiling tea
 Cháhi dabka, a cup and saucer safe
 Cháhi naar, a tea pot
 Degyul, an earthen cooking vessel
 Tsinig lij, an earthen charcoal pan
 Tsony, an earthen lamp
 Kroond, a lamp
 Latsij, a broom
 Naut, an earthen pitcher
 Kartal, a sword
 Banduk, matchlock
 Zooj, helmet
 Reenz, pellet bow
 Chhápun, a sling
 Tsoeta, a stick
 Barish, a spear
 Loor, a long stick
 Bán, a cooking utensil
 Krávahur, clogs for wet weather
 Wagiva rádh, a small mat
 Tsaangij, .. } kinds of mat
 Binna, .. . }
 Wilinj, a clothes' line
 Choncha, spoon
 Kruts, a fire shovel
 Duán, cooking place
 Chumta, tongs
 Shukhur, a hanging basket
 Bustoor, a kid's skin
 Pechwán, a hookah snake

Verbs.

Ujun, to come
 Anun, to bring
 Hechhun, to learn
 Tráwun, to throw
 Pyun, to fall
 Azmáun, to put to test
 Roazun, to remain
 Wodonun, to stand
 Sherun, to prepare
 Alándun, to hang
 Milanáwun, to mix
 Sulun, to raise up

Kadun, to extract
 Sumbaráwun, to collect
 Chun, to drink
 Tsumbun, to bore jewels
 Jurun, to mount, (jewels)
 Prezalun, to kindle
 Tambulum, to be amazed
 Barnayun, to defile
 Dunun, to disperse
 Tsarráwun, to increase
 Uzá dyun, to cause pain
 Khyál karun, to consider

Pressun, to bring forth
 Asun, to be
 Mushuk hyun, to smell
 Myoot karan, to kiss
 Dodarun, to rot
 Nyun, to take or carry away
 Bakhshun, to give
 Gandun, to tie
 Woanun, to weave
 Hatiwálun, to swallow
 Poathun, to grow up
 Wálun, to rain
 Hárun, to lose

Gindun, to play games
 Tsatun, to cut
 Myenun, to measure
 Hárun, to sow, to scatter, to lose a
 game
 Rachun, to nourish, foster
 Lát dyun, to twist
 Rarun, to cook
 Naerun, to come on, go out
 Chánun, to sift
 Tikun, to run
 Wufun, to fly

The Causal Verb is formed by adding *áwun*, as *wufunáwun*, to
 cause, to fly.

Wutun, to twist
 Tikun, to gallop a horse
 Tatun, to wax hot
 Bhotsun, to fear
 Phatun, to split
 Praزالun, to shine
 Katan, to spin
 Alarun, to shake
 Wuzun, to bubble
 Tikán watun, to spring up
 Harhar kariny, { to dispute, to
 } quarrel
 Tsowwiny, }
 Tsadun, to search
 Tsohun, to taste
 Harun, to drop
 Tsatun, to pick
 Meelit gatsun, to adhere
 Pakun, to pass current
 Bhyun, to eat
 Shangun, to sleep
 Wathun, to rise
 Yatsun, to desire
 Nindar kariny, to sleep
 Tsap kariny, to remain silent
 Atsun, to prick
 Tsápun, to show
 Kraknád karun, to scream
 Kashun, to scratch gently
 Tachhun, to scratch violently
 Khasta karun, to wound
 Mulhyun, to purchase
 Parun, to read

Wuchun, to see
 Tsatun, to tear
 Doarun, to run
 Dyun, to give
 Soowun, to sew
 Thawun, to keep
 Dogun, to milk
 Zanun, to know
 Tsoori nijun, to thief
 Loanun, to reap
 Pakun, to go
 Khasun, to grow
 Duwun, to sweep
 Makalun, to escape
 Malool gatsan, to be angry
 Kaditsunun, to drive away
 Pesháb karun, to ease nature
 Lasun, to live
 Ziun, to be born
 Lágun, to beat
 Kásun, to polish
 Riwan, to moan
 Wátun, to make
 Pat tsalun, to retreat
 Tsambun, to pierce
 Dazun, to burn
 Galum, to rub
 Hyun, to take
 Gyawun, to sing
 Prazanáwun, to become acquainted
 with
 Boazun, to hear

Gunzareen, to count	Márun, to kill
Cheerun, to strain	Tsetun, to pound
Phalun, to blossom	Kadun, to extract
Príat karing, to split	Walanágun, to agree together
Phutarun, to break	Dapun, to speak
Chhalun, to wash	Tráwun, to leave
Grazun, to create noise	Ralun, to take
Sapazun, to become	Tsalun, to flee
Bihun, to sit	Tsalanáwun, to put to flight
Mutur karun, to make water	Pherun, to ramble
Tsádun, to call for	Wadun, to weep
Tsát ding, to tumble about	Watarun, to spread
Halakarun, to engage in battle	Gatsun, to go
Pherun, to roll over and over	Natun, to tremble
Tambaláwun, to deceive	Dolun, to slip
Wára boazun, to understand	Gindun, to play games
Keenun, to sell	Langun, to halt in gait
Farmáun, to order	Tháwun, to place
Soazun, to send	Behanáwun, to cause to be seated
Momalun, to congeal	Bihun, to sit
Phrárun, to squeeze	Lekhun, to write
Tsaráwun, to increase	Khatun, to hide
Tráwun, to throw away	Rackhun, to keep
Karun, to make or do	Matsaráwun, to entice
Tehanun, to dig	Wagun, to blow
Wawun, to sow	Khoatsun, to fear
Galun, to lessen	

MODES OF ADDRESS.

To a Man.

A superior,	Hata sah, oh sir !
An equal,	Huta bá, oh brother !
An inferior,	Hato, holla !

To a Woman.

Elderly equal in rank,	Hata didd, oh mother !
Equal in age and rank,	Hata biny, oh sister !
Elderly inferior in rank,	Hata maaaj, oh mother !
Inferior in rank without reference to age,	Hatai, holla !

To a Lad.

Hato nechivyá,	Oh son !
Hato shuryá,	Oh child !

To a Girl.

Hatai koori, Oh daughter !

Answers to Address.

To a superior,	{ Kyá haz, what? your honor !
	{ Kyá sah, what? sir !
To an equal,	Kyá bá, what? brother !
To an inferior,	Kyiho, what?

Friendly Enquiries.

Khair chhoo shuren, ta bátsan	Is (all) well? were children and
ausu khair,	family well?
Wára paatin chhuwa, guzrán	Are you getting on in a good
karán ?	way?

Answer and Rejoinder.

Shukar khuda tálas kun, ..	Thanks be to God !
Tse ^h ti ausoo khair,	Was it well with you too?
Shuren tuhinden,	Are your children well?
Chhwá khair gar,	Was your wife well?
Wájiny ausoo khair mális ta máji	} Are your father and mother well?
chawoo khair,	

Answer.

Shukar hamdilla, Thanks be to God !

Question.

Kyá choo karán ta kráwán,	What are you doing, and how get-
	ting on?

Answer.

Wára paatin chhi ^h wuzrán karán,	We are getting on in good fashion.
Duhá panun wára paaten, chhi ^h	We are passing our days after a
kadán,	good fashion.

How long is it since you left
Cashmeer?

Who was Governor at that time?

Which is the best and shortest
road for a traveller like me?

Are the people there civil to
strangers?

Is living there cheap, and can
a house be got for hire and is a
passport from the Sikh Govern-
ment necessary?

Kaituá kál chhuw goemut to-
hi chhawa kasheer tráwmuty.

Zat sa moas manz kusaus há-
kim.

Nuh musáfarsindi khátara kus
wat chhe^h ján ta lath.

Look tatikk musáfaray gezat
chhá karán.

Anájuk sroejar chhw tate-bei
garu kirai paatin eeyá athi bei
sikanhindi sarkáruk tálakcha
chhwá zaroor.

What would be the best disguise for a European to go there in order to see every thing to advantage?

What is the hire of a poney from Amritsir?

How many guards would be required without a passport from the Sikhs?

Which is the most pleasant season to arrive in?

How many days is a merchant on the road from Lodiana?

For what sum would you contract to conduct me there and back, shew me every thing worth seeing and pay all the expenses, our whole trip to occupy one year, and I agreeing to eat and dress as you do?

How far is it to Jummoo?

I have lost the road, can you shew it me which is the road to Poormandal.

I don't understand. I only know enough of the Cashmeer language to ask and answer the simplest questions.

Go into the nearest village and fetch a guide.

I put myself entirely under your charge who know the country and people.

Can I get a lodging for the night in Poonah, and food for my party and fodder for our horses.

Are strangers allowed to visit that shrine?

As you say, the place is worth seeing, let us halt a day.

Are there any curiosities in the neighbourhood?

Where can I get a drink of water?

Can I purchase a fresh poney

Kusa chál ta pairon sáhab kan yuth tauh gatsit wára paatin saurui saiar kari.

Tailisund bára Amarsar nishe kaituá chhu.

Kaityá wata háwaikh gatsan ásin yudwai sikasund parwána ási nak.

Kus riat chhu rut wátana khátara.

Baipaari Ludiani nishi kats doh wati manz baran.

Chukáwit kaaitu yatsak hyun, yut asi tant tácenú wátanáwak bei put pheerit anak bei ikensá wuchun láick ási tih háwak bei sauree kharaj cháni zimma ási safuruk kál chhui akhwaree amu gami sharta zi tsehyoo khyun chun gandun ási.

Jum koata chhu door.

Asi ráwur wat tuhi tukuva asi háwit Poormandalaich wath kusa chhe.

Buchhus na boazán itsee haná káshir kath zána purtsun ta dapun githui tithui kara.

Gats tat gámas manz gusnyoor ási wataháwakhá anun.

Panun pán tsei chhus pusharán kyazi mulkuk ta lookanhund pynd chuh tsu^h.

Proontsas manz rat roazanas shæe paida sapazyá be,i tsut saityanhindi khátara be,i gasu waishka gurinhandi khátara.

Vopar mahnavis zyárat asmanz tráwanas kinanah.

Tuhi chhiwa dapau sa shæe wuchunús láikh chhih biyus dohasakhistih dera karou.

Yami tarafa kenchuz ajaibbon-nisha chhá.

Treshkathshæe banichiny.

Hekon ze^h yat bázaros manz

in the bazar, or enabled giving mine, who has a sore back in part exchange, and whose only pace is a rough trot ?

Take this rupee, and purchase in the bazar all the necessaries for a good dinner this evening, we are very hungry after our long march.

Tell me a story to pass the time, and keep me awake.

To-morrow's stage is very long, enquire the name of some intermediate stage or village.

Awake me to-morrow morning a little earlier than usual, as the stage is a long one.

Can I get any one to lead my horse, my legs ache from our long ride, and I should like to walk a little.

As the next stage is a short one, and the weather is cool, we need not start till sunrise.

I shall not be able to pass for your relation, my light hair and eyes will prove me to be a European, the former I can dye, what can I do with the latter ?

We will start early and breakfast on the road under some convenient clump of trees, where we shall require nothing but hot water to make some tea ; cook something this evening which will only require to be warmed up, we will then go on and dine at Sopar.

As this is a noted place for thieves, keep awake to night, especially towards day-break, as the cool morning breeze springs up.

Shall we be insulted, if we venture into that crowd.

What is the name of that village .

akh rahwár tautná muill hemon panun tautkya thar cháukalad chhoo bei pakanas manz yatal choo sutah bei kentsá badala tsur dimos.

Rat eeropai bágaras manz he^b sáari zarorák cheez rati bata bhátara azki kuála bapat asi sathá boucha lazimits chhee ti kyázi zyoot páthan kaur asi.

Akh nakala asi nish dap sa yut sathá anda wati ta husyár rozan.

Pagahuk páthan chhoo sathá zyoot, tami gámuk náv pursta yus wati manz ási.

Asi pagáh suli pahan nindri tuil zee tikyá zi manzal chhoo zyoot.

Koortsá chhuá jánis guris jilon rati satá khasana saaitin bhurun sányan daud chhu karán ma,ine watihaná pyáda yatson pakun.

Yeli boonthyum páthan tsut chhoo bei tooriband wela chhoo dera tulamuk hájataftába neranus taeen chher nah.

Look pats yatspa kudriny zibu chhus áshnáv tihund komputszi aichh bei mast myoan katur chho imou nisháno sa,iti meh áhab zánan yudwai mastas wasma kara aichh kyá basa.

Payáh yaits sulik dera tulit wati manz kulikis sáyastal káliv karon kentsá zaroor yatsiná ásun tati páni waraa cháí karana bhátara az rat hyut kentsá ran kyá suli^b tats ráwanas láik ási Sami pata toapur manz rátich tsut yatson khiny.

Yali tsoarihánz shaée mashoor chhaáz rát husyár roaz wára paat subhas kane kyá sulehuk wáv turan chhu wathán.

Yudwai hut hujoomas mánz yatsa begizat yatsa sapadun.

Kumi gámuk náv kyá chhu zi

with the white dome to our right hand?

Shall we find the rivers fordable, if not will there be boats?

It looks like rain this evening, we had better halt to-morrow.

Does my frequent use of my compass and watch, attract the suspicions of our companions?

I wish you would induce that man, without offending him, to discontinue his singing, for I cannot sleep.

I am glad I learnt your language before thinking of visiting your country.

Every one ought to do so.

To-morrow when we enter the hills, I will break up my trunks and put every thing I have in bags.

I am sorry I brought my English saddle and bridle, and yet I can't ride at ease on a native one, and that I brought a crop-tailed horse.

Will it be better to preserve my disguise as a merchant, or take that of a doctor, I have only English medicines, and I don't know the names and qualities of those used by the natives.

I will take care to reward you handsomely, you have behaved well, and taken great care of us. You have also had a great deal of trouble, we will also recommend you to the Agent at Loodiana for permanent employment there.

chhut gumbaz chhur dachun kun dreut uván.

Kauli yatsawa tár labun yudwai nah sat jaée manz náva ásana.

Roodaik alá mat chhi dreut uván; yats, ján chhu zi pagáh yat jáee manz tharás karon.

Aaisi kuni kuni kutub namáh as bei sátas hananis wachhán asi miou sa,ityou nishi gumána nina.

Humsindi gyevana saatin ase chhanas nindar yiwán tsa^h hekaka yiman dilása paati boazanáwit.

Shukar chhoo kyá asi tuhunz kath tsatas rait tuhindi welaiyatiki saairi ki tajweej toanti.

Pazi Prat akhá yithai kanan kari.

Pagáh paháras manz wátawunu,i paniny sanduk phutaráwiny yatsa be,e pret ken khur jeenos manz yatsa tráwiny.

Yudwanai ti yanu wilai yataki zeena saatin árams chhu na yuván toete mauda chan chhus kyá lákumta angrez zeen panun be,i lait tsaut gur saait arrum.

Yats jiván chhu kyá yuhu,i patrou baipárinhund yus chhu me^h ná tai hakeem pairon kara fakat angrez dawá saait chim be,i timanhindi náv bháseeeyats hyu yim look pidd chhi zána na^h bo^h.

Ba tohi rut ináma yatsawu di,un kyá zi tohi ján khizmat karuwa be,i rats raach karuwu sathá mashaghat kadawu tuhindi khé tara ajant sahabas soofarish yatsa kariny Ludiani yut anda wandach noukuri tohi thavi.

The Lord's Prayer.

Máli sáni kyá,
Bihishtas manz,
Chhuk mutaba,
Raka ásin náv,
Choan doar,

Father our that
Heaven in
Art hallowed
Be name
Thy kingdom

Choan ujin,
 Zameeni pyat hukm,
 Choan pakawun,
 Banyyan tithai,
 Kanan yitha asmánaj,
 Manz chhoo di^h asi,
 Az tsut doh dishihainz,
 Saainy bei wanzum,
 Panun asi tráv,
 Yitha paat saij chhi^h,
 Pananyen wauzain,
 Wálen tráwan,
 Asi ma ni^h tramba láwanas
 manz,
 Athuk asi balái,
 Nishi^h mukhaláota,
 Youkanikyá choanui,
 Chhoo muluk hekum,

 Sa barja abadaj,
 Támat ámean,

Thy come
 Earth on will
 Thy done
 Be in that manner
 As heaven
 In is give us
 To-day bread daily
 Our and debts
 Our us forgive
 In the manner we
 Do our debtors
 Forgive
 Us not lead temptation in

 But us evil from
 Deliver
 For thine
 Is (the) kingdom (the)
 power.
 And (the) glory eternity
 To. Amen

A New Testament in this language and Hindoo character has been published at the Serampore Press, as has the Sermon on the Mount in the Persian character by the American Mission at Loodiana.

March, 1844.

R. LEBCH.

There are also in Cashmere, books in that language, in the Sháradá character, viz. Saliwáitch Krishnávtárs, Ram Avtárs, &c. &c.

JOURNAL

OF THE

ASIATIC SOCIETY.

↓ *Remarks on a Boodhist Coin or Medal, sent to the Society through Captain Macleod, Assistant Commissioner, Tenasserim, by H. H. the Prince of Mekhara. By Captain T. LATTEB, 67th B. N. I. in a Letter from him to the Secretary to the Asiatic Society of Bengal.*

MY DEAR SIR,—I have the pleasure of returning you the coin with which you intrusted me, together with the following remarks:—

The coin is Boodhist, and purely symbolical, having no legend, or characters whatever. I am also of opinion that it does not present any peculiarly interesting feature; is of a modern date; and at a time when carelessness existed in reference to the symbols of the Boodhist faith.

The first peculiarity that I will notice is the design in the centre, ("a" fig. 1,) which is a Boodhist emblem, representing a "*tsédyä*," or small Pagoda, in which are deposited reliques of Boodh, volumes of the "*Tāra*," or sacred Law; it is almost universally found depicted on Boodhist coins. But there is a peculiarity about this one which I am not aware has hitherto been met with, and that is, that instead of this "*tsédyä*," being represented as usual by a cumulus of hemispheres, either three (v. fig. 3,) or six (v. fig. 4,) in number; in the first instance always arranged two for the base, and one for the apex;

in the other, three for the base, two for the next layer, and one for the top ; this triple combination is essentially requisite for the truthfulness of such Boodhist symbols. It will be first remarked that the "tsédyä," in the instance before us, is not represented by a pyramid of hemispheres, but by one of upright glyphs, surmounted with a sort of parasol roof. It has been a common remark, that the different representations of the sacred structures of the early nations of the world shewed a remarkable similarity, in fact seemed to be copies of their own domiciles. Now the best division, as far as domiciles are concerned, of these early races, may be said to be two, viz. the Troglodyte and the Scenite ; the dweller in caves, and the dweller in tents ; and in proportion as the cave is a ruder and more uncouth dwelling than the tent, so does it argue an earlier period. But there was a Boodhism that was Troglodyte and a Boodhism that was Scenite, a Boodhism of the cave, and a Boodhism of the tent, but Boodhism was not introduced among the tent-dwelling race till at a comparatively speaking very recent æra. Now the "tsédyä" emblems, (fig. No. 3 and 4) are representations of the hemispherical convexity of a cave, and appertain therefore to the Boodhism of the cave, and are therefore of a more ancient type than the one under consideration, (fig. 5,) which is a scenite "tsédyä," or representation of a tent, having a tent-like roof, &c. In the appendix on Boodhist emblems to his "Notes on the state of ancient India," Col. Sykes says, "It is to be remarked however, that when the Chaitya, or temple of relics is sculptured out of the rocks, it is represented not by the triple hemispheres, but by a very short truncated cylinder surmounted by a hemisphere, and crowned with a parasol, or an umbrella." Here we find described a mixed or transition tsédyä having the hemispherical top of a cave, and the parasol roof of a tent. It is to be borne in mind, that though the race who first inhabited the cave and consecrated it as a place of worship, were comparatively low in the scale of civilisation ; the decorations of them fell to their posterity when well advanced in civilisation and art, as is shewn by the magnificent nature of the ornaments ; to them they were haunts consecrated by the reminiscences of an ancient faith ; and it is not at all unlikely that they (sufficiently advanced in civilisation to have possessed themselves of tents and roofed buildings) should have added the roofed, or scenite "tsédyä," to the list of decorations.

I look therefore upon these *Deghopes* as more modern than the hemispherical "tsédyä". The form however of the "tsédyä" before us, which I may call a scenite "tsédyä," is not, to the best of my knowledge, found on coins, although, according to Col. Sykes, a complicated one exists sculptured on the rocks of the cave temples; there is however, an approach to one figured the last in the row of "tsédyäs" given by Col. Sykes, in the plate accompanying the notes above referred to; it is represented (fig. 6) in our plate, but this is a true and correct "tsédyä;" for the individual objects of which it is composed are trine in their combination. It is to be remarked, that 3 is a most sacred number in the mind of a Boodhist, endeared to him as symbolic of the most sacred tenets of his faith; not only typifying the holy Triad, "God, the Law, and the Congregation," but also calling to his recollection the three ways by which he progresses to *Nieban*, "the not to be;" the three grades of initiation before he can attain the crowning point of his craft. If we count then the number of hemispheres in the base and each side of the "tsédyä" (fig. 4,) or the number of quadrangular figures in the "tsédyä," (fig. 6,) we shall find there are three in each face; making by counting in that way 9 in the three faces, forming a trebly expressive symbol of the expressive three; for this reason, nine was ever held as a mystical and holy number among Boodhists, hence its Burman name *Kō*, "to worship, reverence," hence likewise its Pali representation by the *nāṇā rādāna*, or nine jewels; Burmanised into *nāwā ra*, "the essence of the nine," these jewels were worn, set in a ring, as a charm against every evil. In our "tsédyä" however (fig. 6,) we have 10 upright glyphs, thus vitiating the whole. The scenic "tsédyä" is the prototype of the modern "*Pyaththad*."

The next mark to which I wish to call your attention, are the two similar upright figures on the right and left of the "tsédyä," (b. b. fig. 1.) These are representations of the head of the Cobra Capella, (Coluber Naga.) This is an interpolation of the Semitic myth of the Dragon, &c. into Boodhist story, and which does not properly belong to it; the account in elucidation of this will be found in the accompanying note,* and will at once point out its Brahminical origin.

* Gaudama remained with his family till he was 29 years of age, he had married and had had one son; he then left his family and kindred and wandered in the

The two emblems over the roof of the "tsédya," are doubtful, that to the right (c. fig. 1,) may be intended for a representation of the Boodhist praying wheel; or may be for the sun, and that to the left

jungles and woods for six years; at the end of that time he met a *Brahmin* of the name of *Thōteya*, who was cutting grass. This *Brahmin* gave him seven bundles of grass, with these he continued his wanderings till he arrived at a peepul tree in *Boodha Gaya*. He then felt a secret influence come over him, that the time of his becoming a Boodh was at hand; he accordingly spread out the seven bundles of grass and said, "Let a sign appear." Immediately there arose from the earth a throne of diamonds, upon which he sat himself down, and then the mysterious influence came over him that rendered him a Boodh. He remained seven days on this throne, being impregnated with this Boodhic spell; this spot was called *Raja Paleng*, or "the Royal seat." The ruins of a tsédya, built over it by after kings is still shewn. From thence he arose and removed a short distance to the eastward, and sat down contemplating the throne with a fascinated love; he remained in this state without moving, or even winking his eyes for seven days; this spot was thence call *anie meethaka*, from *anie*, "without," and *meethaka*, "to wink;" here also, as in all the other spots, the ruins of a tsédya are shewn. Hence he removed to a spot a little farther to the eastward, and kept walking backwards and forwards in contemplation during the space of another seven days, this spot was styled *Radana Chund-komar*, "or the jewelled walk," a building, the length of the walk, was built over it by after kings, the ruins of which are yet shewn. From thence he moved a short distance to the west; and there the *Déwatas* built him an habitation of resplendent gems, in which he remained for seven days, and concocted the *Abidhurma*, or "excellent Justice," the mode by which mankind may attain the *Nieban*, this spot was called *Radana Ghur*, or the "house of jewels." Thence he removed a short distance to a peepul tree where the shepherds came for shade, and remained there seven days absorbed in meditation, this spot was called "*Ajie pala Nigroda*, or the shepherds' peepul tree." Thence he removed to a place called *Mooja Linda*, and there remained seven days, during which a fearful storm arose, such as was never witnessed before, and the rain descended in torrents; it was then that the *Naga* king, who was in a lake close by, bethought himself to shelter Gaudama; he first intended to have raised for him by magic a shed of jewels, that should excel in splendor the house made by the *Déwatas*, but then he thought himself of a method by which he might shew his devotion in a still more enthusiastic way; so he distended himself enormously, and turned himself seven times "fold upon fold" round Gaudama, so as to form a hollow cavity; his head also he distended, and with that he shielded the head of the God. In the midst also he formed a seat resplendent with gems, on which he placed Gaudama; but the latter was so absorbed in meditation, that all this passing scene around him was unheeded. From thence Gaudama rose and removed to a place, where he remained in meditation another seven days. During these 49 days, Gaudama was undergoing that impregnation that rendered him a finished Boodh. He neither ate, nor drank, nor washed his mouth. He then arose, took refreshment, and commenced his ministry. The above account is taken from a Pali work, styled *Oossathako Lankara*, or "the ornament of the Devout." All the above-mentioned places are in the environs of *Boodha Gaya*.

d.....

figs

c.....

a.....

b.....

b.....

fig. 10



fig. 11.



fig. 2.

fig. 9.



fig. 3



fig. 4



fig. 5



fig. 6

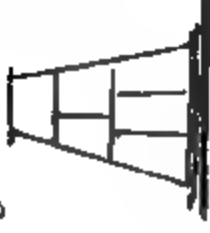


fig. 7







fig. 8



(d. fig. 1,) for the moon; in the latter case it is another evidence of the spurious nature of the symbol of this coin, as these two luminaries have nothing particular to do in Boodhist writ.

The symbols on the left hand of the coin, figured by themselves, (fig. 7,) are very common Boodhist ones. The lower one (c. fig. 7,) is most probably a representation of the Swastika or cross, the distinguishing mark of a class of mystical Boodhists anterior to the time of Gaudama. The three parallel lines, or scores marked (b. fig. 7,) is a representation of the tri-glyph, the usual emblem of the Boodhist Triad, when they were wished to be expressed as three distinct things, viz. *Bōddhā gōñ*, "God or Boodha." *Dhāmmā gōñ*, "the Law," and *Sēnggha gōñ*, "the Congregation." When these three were to be represented as one, in fact the Trinity (*thārāñā gōñ* "the decisive attributes") then the tri-glyph was joined at the bottom like a trident.* (a. fig. 7.) As standards are very commonly found among Boodhist symbols, it is more than probable that the three glyphs were borne upon the banner; whilst the trident surmounted the staff. The tri-glyph seems to have been the cognisance of the town of Arracan, which was a famous seat of Boodhism according to tradition; and hence might have arose its name in Ptolemy of Tri-glyphon, which is the Greek translation he gives of the Hellenised term Tri-lingum, shewing that his information must have come from Brahmins, and that the latter had already began to appropriate to themselves the rights of an elder caste.

I have said that the three glyphs when joined at the bottom were symbolic of the Trinity, or Supreme Divinity; I believe it to be the prototype of the Coptic,  implying "potentiality"; the following are its types in the Hieratic Egyptian  in the Hieroglyphic  which last would be considered a very expressive Booddhic symbol.

It may not be here out of place to remark, that among many early nations three scores, or marks, were emblematic of the Supreme Divinity, either as among the ancient Hebrews by the three Yods ; or by the high priest distending three fingers as he stretched out his hand over the assembled multitudes whilst bestowing his yearly benediction; many instances to this effect might be collected from

* To explain myself more clearly, if in the Doxology it were required to express by symbols, God the Father, God the Son, and God the Holy Ghost, then the tri-glyph would be used; if to express the Supreme and Triune God, then the trident.

various authors, but I will only mention a curious fact which has not hitherto been noticed, viz. that the الله Allah of the Mussulman, is nothing, but three distinct upright marks. Sometimes these are found, I believe, united at the base.

I have already had occasion to mention the reliance that is to be placed in numbers; by this means we may often determine the family to which a myth belongs. The number "Three," however, seems to have been common to all nations of the world as a sacred number; besides its arithmetical peculiarities, there are many phenomena in statics that must have been sufficiently known to all nations, to have accounted for its sacred character. The number "Seven" was held a perfect, or sacred number among the Semitic families of mankind, in allusion evidently to the seven epochs of creation mentioned by Moses; but in unmixed Boodhism it is not so held; whereas "Nine" is. Thus we see at once that the episode in Gaudama's life, mentioned in the note, is evidently a Semitic interpolation of Brahminism, from its allusions to the number Seven.

With reference to any other marks on this side of the coin, I am not aware that they have any particular interpretation, and are probably meant to fill up space.

On the obverse of the coin (fig. 2,) are various symbols, which I take to typify a Boodhist representation of this universe in particular, and former universes in general. Before I enter into an explanation, I must premise, that, according to the Boodhist, a *Māhagabba*, or great system, or creation of universes, is characterised by the presence of 28 Boodhs, a *Buddagabba*, or system such as the present mundane universe is characterised by a smaller number; the present is characterised by 5 Boodhs, four of whom have already appeared, viz. *Kokōthānda*, *Kōnagamā*, *Kathābā*, and *Gāūdama*, the fifth *Arieyamatā*, is still to appear. As he will be the 28th Boodh of this *Māhagabba*, he will close the number; the universe will be utterly annihilated, and then perhaps

Novus ab integro sæclorum nascitur ordo.

It is difficult to determine what that curious emblem in the centre (a. fig. 2,) may represent. Two triangles having two other triangles within them uniting their points in a circle having a dot in the centre. There seems to be that Masonic character about this symbol, that

leads me to suspect that it may afford a corroborative argument to an opinion some time since formed by me, that Boodhism and Freemasonry originally came from the same source, existed together, as some of their symbols are identical, as also are their inculcations on the subject of Ethics. This however is a subject far too lengthy to discuss in this paper, and nothing but an ample discussion could do justice to the subject, and elicit the curious instances that might be adduced. Till however we can form a more decided opinion, we will call it what perhaps a Boodhist priest would do (who however would be no great authority), a representation of the Rajpäleng, or throne on which Gaudama underwent the Boodhic influence. Above this are five drop-shaped figures representing the 5 Boodhs of the present *Buddagabba*, (fig. 9,) one of these has been nearly punched out by a hole made for a ribbon, as this coin seems to have been worn round the neck to avert the evil eye from a child. Figures of Boodh when small, are found sketched as in (fig. 10,) or should they be still smaller, the three are run into one (fig. 11.) I take then all that is included in the inner circle characterised by the 5 Boodhs, and the *Rajpaleng* of the present Boodh, to represent the present mundane universe. Beyond these are seen a number of circular figures, some of which have been forced into one another by pressure, however their number is distinctly 28, the number of Boodhs characteristic of that Mahagabba, or great period, of which this universal world is the last member.

In conclusion, I beg to remark that I have coined a word "*Boodhic*" to express a different idea from Boodhist, or Boodhistical. By Boodhist or Bhoodhistical, I mean of or belonging to him whom the present Boodhists style "*Boodh*" viz. Gaudama. By Boodhic I imply of or belonging to that Boodhism that existed long before the time of Gaudama, which the latter improved upon and rendered more esoteric in its psychological system. Some symbols and ideas are Boodhic, such as the tri-glyph, the doctrine of the Metempsychosis, the sacredness of the yellow color, &c. &c. Others again, such as a representation of Gaudama's foot, his throne, &c. are Boodhist. Most of the Pra-bat, or impressions of Boodh's foot, are Boodhistical, but there is one *Boodhic* one, the only one I am aware of, close to the town of Akyab, at a place called Peer-Buddha, it is held in reverence by all natives of the east, whether Mussulman, Hindoo or Boodhist.

It is very probable that Boodhic reliques and symbols would be found numerous in Abyssinia, some there undoubtedly are.

Dear Sir,

Yours truly,

T. LATTEB.

P. S.—With reference to the obverse of the coin, (fig. 2,) any one in any way acquainted with the Boodhist religious Cosmology, will be almost sure to concur in the explanation I have given of it. With reference to that part of it, figured separately (fig. 8,) I have already declared that to the initiated it probably will call to mind some masonic emblem, its position on the coin in reference to the other symbols, would lead one to suppose that it was meant to symbolise the handiwork of the Great Architect and Geometrician of the Universe.

View of the principal Political Events that occurred in the Carnatic, from the dissolution of the Ancient Hindoo Government in 1564 till the Mogul Government was established in 1687, on the Conquest of the Capitals of Beejapoor and Golconda; compiled from various Authentic Memoirs and Original MSS., collected chiefly within the last ten years, and referred to in the Notes at the bottom of each page. By COLONEL MACKENZIE.

(Concluded from p. 421.)

IV.

*Continuation of the State of the Carnatic Balla-Ghaut, carried down to the period of the death of Chick-Deo Vadyar, of Mysore, in 1704, with a Map, explanatory of the extent and situation of the Mysore Territories at that period.**

1. At the period of Chick Deo's death, the political state of the Carnatic began to assume a new aspect, that becomes

Final reduction and conquest of Beejapoor and Golconda, by Aurungzebe in 1687.

now more interesting to an European reader, as an accurate knowledge of its situation at this time is essential for a clearer understanding of these claims and pretensions, that not only then occupied the immediate parties, but ultimately engaged the European settlements in

* This part was hastily noted for the use of Colonel Wilks's designed work on the particular History of Mysore in 1808.

their contests, with consequences that have agitated these countries down to a very late period, and it is also imagined, that a more perfect knowledge of the changes since introduced into the internal policy and management of the country, may be assisted by a distinct view of its state at that time, and of the successive administrations and rulers that rapidly followed each other within this period in the government of the Carnatic. It is proposed here to sketch out the situation and extent of the several powers that were in existence at this epoch, and in connection with the new formed state of Mysore; this may be also an useful preliminary to some account of the various modifications arising from the circumstances of the times, and the sudden appearance of a new power on the theatre of action.

2. At the very moment that the recent Mogul conquest of Beejapoor and Golconda seemed to have swallowed up even the name with resources of these states, and threatened to reduce the whole of the Peninsula to the Mahomedan yoke, the Marhatta nation which had been suddenly risen, and under a form hitherto unknown in politics, comprehending a system neither completely dependent on the will of one person, nor yet regulated by any mode hitherto observed of consulting the interests of a nation in the voice of their most distinguished counsellors, wresting a share of the spoils from the conqueror, opposed an unexpected barrier to the Hindoos of the South; but as the effects of their depredations on the provinces of the Carnatic, by repeated invasions that they carried to the utmost extent about this time, had not yet been made the pretence of invasion under the memorable claim of *choute*, they are here barely introduced so far, to illustrate the policy of Chick Deo and his successors, and the place which that new state now began to assume in the general scale of Balla-Ghaut, which soon after this time fell, to be considered as a dependent province of the government of the Deccan.

Progress of the further conquests in the Deccan, on the fall of Beejapoor and Golconda.

Retarded by the sudden growth of the Marhatta power.

3. One of the first steps of Aurungzebe, after the fall of Beejapoor, was to detach Cassim Cawn with an army to reduce the upper Carnatic. He was attended by several subordinate officers, civil and military, among whom Ali Merdan is mentioned as fouz-

A. D. 1689.
First Mogul army sent into the Carnatic with Cassim Cawn's fouzdar of Carnatic Beejapoor.

dar of Canchee. He seems to have met little opposition. He soon succeeded in establishing the first Mogul system of government in the country, and is considered as the first Mogul Fouzdar of Beejapoor Carnatic. He was surprized by the Marhattas and the Chittledroog chief at Dodairee 11 years afterwards, where he died of a violent* death, whether by his own hands is doubtful. He yet appears in this interval to have effectually reduced the open country to the form of a province, dependent on the Soobedaree of Deckan, the general government of which was soon after conferred on the celebrated Zool-facar Khan. After the reduction of Golconda, that officer appears to have been employed on an unceasing course of severe service for nearly 19 years till the death of that Emperor in 1707. Of the destructive warfare in which the whole country was for this time involved, some idea may be formed from its being especially stated, that in six months' time he fought 19 actions, and marched or countermarched 3000 coss.† To complete the measure of their wretchedness, the unfortunate inhabitants were at the same time afflicted by the accumulated misery of

The provinces beyond the Coleroon laid under contribution.

severe famine,‡ in addition to all the other horrors of war. In this time he made three different expeditions beyond the Caverry to Tanjore and Trichinopoly, laying these countries under heavy contributions. He took Gingee and Wakenkaira, places memorable in the history of that time, more for the length of their sieges, than for the skill of the assailants, or the strength of these fortresses. The former fortress had for sometime been the refuge of Rama, the chief of the Marhattas; its capture had been a special object of the Emperor's vigilance and attention, and it was expected, that in its fall, the hopes of that aspiring nation would have been crushed, and the possession of the strongest fortress of the Carnatic Payen Ghaut have secured a seat of government, and a place

* See the Doodaيرة Memoir, confirmed by the Hakeekut Hindoosthan.

† Scott, Vol. II, p. — Some notices of Cossim Cawn and of the new Governors sent into the Carnatic occur in the Madras Records, (perused since the above was written,) in the end of the year 1687.

‡ This famine appears to have extended through the whole Peninsula. It is repeatedly mentioned in the Madras Records, with the precautions taken for the relief of the rising settlement. In the Memoir of Sree Permadoor, and in the Records or Annals of Condamir, the effects of the famine are detailed, and the extravagant prices to which grain of all kinds arose. The Cycle year Achaya is memorable as a period of aggravated distress from war, famine, and pestilence.

of arms. That siege being protracted for 10 years by treachery, by the cabals and intrigues of the nobles and even of the princes, at last fell in 1700;* but in these views, the Moguls were disappointed. Rama escaped previous to the surrender, and the whole resources of the 96 Marhatta tribes were soon rallied around him, and Gingee was found to be so extremely unwholesome, that some years afterwards their armies cantoned on the plains of Arcot, which led to the establishment of that capital of the lower provinces in 1716.†

4. In consulting undubitable memoirs of these times, we are struck with surprise at the extraordinary number of horse kept up by the several powers, and are astonished at this day, how the country could support them. The Mahomedan writers complain, that this war was protracted, and the country ruined by the Imperialists not keeping up an adequate force; and in proof of this, state, that at this long period of protracted warfare, “the Cavalry kept up by the Moguls amounted only to 84,000, while the late governments of Beejapoor and Golconda are stated to have constantly kept up the amazing number of 200,000 horse.” This perhaps may be explained by recollecting, that the Marhattas had now not only got possession of a considerable part of the late territory and Ahmednuggur, and those tracts particularly of Baglana, &c. where horses are reared; but of the sea-ports of Dabool, &c. as far South as Honore and Batcull, (and even Marhattas and Moguls. from Goa,‡) where horses were imported from Persia and Arabia; whence they were enabled to overrun the Carnatic with such vast swarms of marauding cavalry, that the writers of the time describe them as swarming like ants or locusts.§ “The establishment of a fleet by Seevajee, seems to have particularly pointed to this resource, and though it is not mentioned in any account of these times, it is not likely he would overlook the advantage of the trade already carried on by the Arabs in horses from time immemorial. From no

* Madras Records.

† The 96 Madras tribes are enumerated in the Marhatta Memoirs, Vol. I, p.—

‡ For notice of the trade in horses from Arabia and Persia to India, see Cæsar Frederick's Account of Beejanagur and Batcull, Honore and Goa, in Churchill's Collections.

§ See Scott, Vol. II, p. 107.

other quarter could they be provided, since the whole interior resources of Hindostan were in the hands of the Imperialists.*

5. The whole of the Mogul conquests in the South at first appear (agreeable to the system established by Akbar,) to have been formed into one Viceroyalty government or Soobah, which at first comprehended their conquests in the Deckan of Dowlatabad and part of Berar; but afterwards, as these by degrees fell, Beder and the rest of Berar were added, and the capital being removed from Burhanpoor to Aurungabad, they gradually extended their conquests further South, till under Aurungzebe and his deputies, the Soobadaree of Deckan, now at its greatest extent, was arranged into six Soobahs, viz:—

And finally comprehended within the conquered kingdoms, six Soobahs.

1. Candeish, capital Burhanpoor.
2. Aurungabad, lately the capital of the Nizam-Shahee dynasty.

3. Beder, ancient capital of the Bhaminee Sultans.

4. Berar, Elichpoor generally the capital.

5. Hyderabad, lately Golconda, capital of the Cootub-Shahee dynasty.

6. Bejapoor, capital of the Adil-Shahee dynasty.

The last (No. 5 and 6,) were formed from the late conquests; and the Carnatic and its dependencies were at this time formed into Circars, dependent upon either of them; being in fact those districts that had been reduced, or laid under contributions by the late governments of Beejapoor and Hyderabad, or Golconda; accordingly we find them enumerated under the distinctions of Hyderabad-Carnatic and Beejapoor-Carnatic, in the official registers of the government of Deckan.

7. These were further distinguished into Balla-Ghaut and Payen-Ghaut, according to their situation above or below the Ghauts.

8. The *Carnatic-Hyderabad-Balla-Ghaut* comprehend the province, forming under a latter arrangement the five Circars, of 1 Sidhout or Kurpa, 2 Ganjicotta, 3 Gooty, 4 Gurramconda, and 5 Cummum, comprehending 66-purgunnahs, regularly assessed at a fixed revenue.

Four of these provinces afterwards formed the petty state of the

* See Seevajee's Memoir, where a detail of his resources, finances, forces and strongholds at the time of his death is given. His army or fleet is also mentioned.

Patans of Kurpa,* who established themselves there about this period; and within a few years extended their possessions along the Eastern Ghauts to the Cavery, including Barramah, most of which at this time belonged to Mysore. The part they afterwards acted in the transactions of these times will excuse this being noticed here, though at the period we are speaking of, they were not yet known as pretenders to power or consideration among the governments of the Peninsula.

9. The *Carnatic-Hydrabad-Payen-Ghaut* was divided into 14 Circars, containing 129 mahals, composed of the whole country extending from Guntoor to the Coleroon, along the sea-coast of Coromandel; afterwards better known under the denomination of the Soobah of Arcot.†

Gingee‡ was the first capital designed for this province by the Moguls, Arcot afterwards capital of the Soobah of the name. The European sea-ports and factories of *Pullicat, Madras, Sadras, Pondicherry, Tranquebar, Porto Novo* and *Negapatam* were in this division; where in the confusion of the times, we find the European agents alarmed and suffering from the predatory incursion of the Marhattas, Moguls, Patans, &c. to procure a precarious protection by frequent presents and bribes to the officers of all descriptions. Yet amidst these commotions, we find that the security derived to property, encouraged many of the natives to settle under their protection, and thus laid the foundation of the prosperity of these colonies that were at this time but weak and defenceless. Further details of this province, which was shortly to be the seat of events that ultimately led to a total change of government and power in the country, would be here out of place, than as they may be descriptive of the state of the country in general.

10. The Carnatic-Beejapoor appears to have been altogether considered as Balla-Ghaut, unless we except the dependencies south of the

* See Memoirs of the family of Kurpa, Canoul, &c.

† The principal Purgunnas or Mahals are enumerated in the Dufter. The tract lying South of the Palar, including Vellore, Gingee and Barramah, are denominated Mooftee, being lately conquered. The tract North of that, extending to Guntoor, including the present Jagheer, Nellore, Angole, &c. are all divided into Circars, see Dufter.

‡ See Havart and Scott for the transactions at Gingee, and the Madras Records for the Embassy to Seevajee, under the year 1672.

Coleroon, (rated as the Circars of Tanjore and Trichinopoly,) and Gingee* and its district, where it had extended its conquests below the Ghauts to the Eastern coast; its Western provinces are enumerated under their respective Circars. In forming this new province of Carnatic, it would appear that the arrangements of the preceding government of Beejapoor had been followed; and though Adone, and Ghazipoor or Nundial, lying South of the Toombuddra, from its natural situation, might be considered as properly belonging to the Carnatic, yet they are included† as distinct Circars (the 4th and 9th) of Soobah Beejapoor, either owing to their being earlier reduced previous to 1648, or to their being held at this time by some powerful families,‡ to whom they were still left as the price of abandoning the declining fortunes of the late dynasty. This eventually occasioned their separation from the rest, when the Balla-Ghaut-Carnatic, in the course of events, came under the domination of the possessor of the Mysore resources, 73§ years afterwards; nor were they ever after connected under the same administration, until the cession by the Nizam in October 1800 to the East India Company, brought all the country lying South of the Toombuddra and Kistna once more under one government, an arrangement which undoubtedly promises more firmly to secure the tranquillity of the whole under one systematic rule, separated by these limits which nature prescribes as the best mark of division between distinct powers.

11. The important frontier province of Sanoor Bankapoor, also was not included in this arrangement, although it was part of the ancient Carnatic kingdom beyond the Toombuddra. It had been at an early period, on the fall of Ram-Raz, granted to one of the Patan chiefs of Beejapoor, who by cultivating the good graces, and embracing the party of the conqueror at an early period of this resolution, secured its possession in that family as a jagheer or military fief, dependent on the new Mogul conquests. In the Dufter it is entered as a Circar|| of Beejapoor, including 16 Mahals, and rated at a fixed revenue.

* On Gingee as then reduced, depended the tract along the Coast from the Palar to the Coleroon, which Sevajee reduced in 1677, and was held for 10 years, till Beejapoor and Golconda fell, or rather until the capture of Gingee in 1700.

† Adani Memoir.

‡ Sanoor Memoir.

§ A. D. 1761, when Serah was ceded to Hyder by Basalut Jung, but Adoni was retained.

|| Sanoor subdivisions in the Dufter.

12. The important part that the three families* of Sanoor, Kurpa and Canoul, (who appear to have now rallied around them the remains of the first Affghan invaders,) took in the political transactions of the Carnatic, shortly after the death of Chick Deo Raja, had not yet commenced; and the origin of their power was yet in embryo; but was shortly to make a considerable figure in events connected with Mysore, and the rest of the country.

13. It is proper to advert to this political organization of the country under these divisions of Beejapoor and Hydrabad Carnatic-Balla-Ghaut, as they are necessary for understanding the discussions that have since repeatedly followed this distribution on the official and revenue records of the Government; and the frequent claims and pretensions on different chiefs or zemindaries as dependents on one or other claims, which have been even referred to in the political negotiations† of later years, under circumstances that tended to embarrass and distract; and might have eventually been followed by more important consequences.

14. In the wars and negotiations that ensued for 110 years in the Carnatic, before the basis of one regular system of Civil government was established in 1800, the extent, situation and relative connection of the several subjects of contention can scarcely be understood without recollecting the origin of these two great divisions or governments, which though sometimes united at first in one person, were afterwards separated, and under the title of the Nabobs of Serah‡ and of Arcot. The officers holding them came by degrees to assume a political character, and degree of power that enabled them to establish their families in the hereditary government of these provinces in a state little short of independence.

15. Indeed, their origin was so far lost sight of, that the legitimate rights of the native provinces and population were entirely absorbed in the mutual pretensions of the families of Hyder Alli and of Maho-

* Memoir of the Patan families of Sanoor, Canoul and Kurpa. The Kurpa-cur obtained possession at one time of nearly the whole country extending along the Eastern Ghauts, from the Kistna to the Cavery, including Cumnum, Kurpa, Gurramconda, Baramahl, Colar, &c.

† See the treaty of Seringapatam in 1792.

‡ Hyder's first appearance as General of Mysore, was followed by the pretensions to the Nabobship of Serah, after the cession of Serah and Ooscotta, from Basalut Jung, in A. D. 1761.

med Alli; pretensions that originated in the respective range of the military command of two deputies of the Mogul viceroy of Deckan, or rather (as in the case of Hyder particularly,) of persons who had in the disturbed state of the times, possessed themselves of their title and authority. Even the Carnatic itself in this short space lost its name, when by an unaccountable misnomer, that name which originally belonged to a central province of the upper country, and afterwards to the empire founded upon it, was in European instruments of the highest political import, exclusively applied to that tract of the lower country, which stretches along the coast from the Gondegama to the Coleroon, and which though formerly governed as a dependency of the Carnatic, has always among the natives been known by the name of Tonda-Mundalum, or Nara-Mundalum.*

16. To return from what may scarcely be deemed a digression from the state of the country on Chick Deo's demise, (since it relates so intimately to the future destination of his acquired territory,) it is proper here to notice the distribution that took place of the Southern provinces under the Mogul arrangement. In this distracted state of things, when the new form was introduced about 1687, 16 years previous to the date we are treating of, it would appear that the Mogul chiefs were guided in some degree by the forms they found already established under Beejapoor and Golconda, which do not appear materially to have differed in principle† from their own, if we compare them with the system of Akbar, (or rather that of his Hindoo financial minister Toder Mull.)

Rana-doolah, (or as is said Shahjee,) had originally organized the conquered country south of Caverry into 7 purgunnahs or mahala, including the capital.

- | | | | |
|--------------|----------------|--------------|---------------------|
| 1. Serah, | 3. Bookapatam, | 5. Colar and | 6. Hoscottta, |
| 2. Boodiall, | 4. Pennaconda, | Bangalore, | 7. Pedda Ballapoor. |

But Bangalore with its district, (as has been already mentioned,) was transferred by treaty to Chick-Deo, in the year 1687, within three days of his getting possession.

* Nara Mundalum, i. e. the lower region, a name which with further illustration of the Ancient History of this country, has but very recently come to our knowledge, (February 19, 1810,) and furnishes a key to the real translation of the classical nomenclature of the Alexandrian geographers, Paralia, Soretanum, &c.

† See Memoir of Serah.

17. These districts were subdivided, or rather the former arrangement was preserved of *samoots*, or *mahals*; *mouza*, or established villages; and *majara*, hamlets or dependencies, under a system organized and managed by a new class or colony of Marhatta Bramins, who attended the Mogul chiefs, and whose descendants still officiate in the financial departments throughout the Carnatic. From a descendant of one of their chiefs, several notices of this system were obtained at Serah in 1801.

18. The above 7 *purgunnahs* appear under the latter arrangement of Asoph Jah, to be then subdivided in 55* *mahals*, assessed at a stipulated revenue or *rudanee*, collected under the immediate management of the imperial officers; but it is probable, that this subdivision existed also at this time (1704,) and on examination of the names registered in the general Dufter of Deckan, there is reason to suppose, that both the Patan and Mogul arrangements were generally regulated by the ancient subdivisions of the country, as far as was consistent with their general plan of reducing the conquered states to the form of provinces, subdivided into lesser, convenient portions named *circars*, *taroofts*, *samools*, *mahals*, *mouzas*, &c., and probably founded on the arrangements of *dasums*, *samas*, *naads*, *purgunnahs*, *habilies*, *grams*, &c. &c. that prevailed among the Hindoos from early times.†

19. The revenue of these organized provinces was realized by officers specially appointed for that purpose in the department of the exchequer, (*deewanee khalsa*,) but the Moguls appear very early to have introduced the practice of ceding considerable tracts of the best lands to the *munsudars*, to support certain bodies of forces maintained agreeable to their respective ranks and titles; which were originally conferred according to the strength of their quotas though at the time we are speaking of, strict musters were permitted to be dispensed with. The circumstances of the times, when the conquest was effected by armies composed in a great measure of a militia thus maintained, and perhaps allowed to increase beyond the just proportion of

* See Appendix No. 6, containing the list of the *mahals*, extracted from the Dufter, and collated with that of the Hakeekut, &c.

† These divisions and provincial arrangements are particularly detailed in the manner illustrative of the History of the Carnatic under the Balal dynasty; in the Ram Raja Cheritra; in the Bangalore Memoir, &c. &c.; and the complete lists of the 56 *dasums* are obtained from all quarters of the Peninsula in different languages.

their grants, (for we find that inconveniences were very soon felt and complained of,) and the necessity of conciliating the Deckan chiefs, many of whom maintained high pretensions, also increased the evil in the Beejapoor government. Indeed it had previously proceeded to an extent that was supposed, from the overgrown power vested in the great landholders,* to have accelerated the fall of that government; since latterly the Sovereign could be only considered as the head of an arrogant aristocracy, who were more disposed to dictate than to obey. In Golconda, their power was controlled by the influence of the Bramin ministers, who yet committed a fault the reverse, by attempting to manage by corruption and the influence of wealth, which in time of great national distress, is never found to improve public virtue. The great influence conceded to the Mahomedan munsudars in the Mogul system, perhaps contributed to much of the disorders that soon after ensued in the Carnatic, which was further increased by the number of Hindoo chieftains (self-erected,) zemindars or polligars, that were dependent on the province, and attached themselves to one or other of the several parties that soon after arose on the death of Aurungzebe.

20. Upwards of thirty polligars† are enumerated, who were dependent on the Southern parts of the Carnatic some little time previous to the Mahomedan invasion, but they were probably still more numerous, unless that title be restricted to a certain description of Hindoo petty chiefs and polligars, who were still permitted from various motives to hold their more remote, or less productive districts, on paying a fixed tribute or condanee under a constrained allegiance, and were classed as zemindars dependent upon the province of Carnatic. This tribute was always collected with difficulty, and frequently by force of arms; but exclusive of these zemindars, whose weakness kept them in a state of undoubted dependence, there are others enumerated in the list of 27 Hindoo‡ chiefs dependent on the Carnatic Beejapoor, (in the Duf-

* See Universal History, Vol. 6, p. —.

† See Bagalore Memoir for these poligars enumerated, also the Memoirs of Serah, Bednore, &c. The famous Sevajee's new-formed fleet extended their ravages to the coast of Canara at this time, and he himself in person commanded it, when Baraloo was plundered of a very considerable booty. See Marhatta Memoir of Sevajee.

‡ See list of zemindars of Sera in the Appendix No. 7, but these are only the zemindars registered in 1742.

ter or Register, and which are presumed to have been continued from the Beejapoor government,) whose pretensions to be included in this list are more equivocal, and were undoubtedly not always acknowledged even at the forming of that record. Though Cassim Cawn subjugated the open country, neither he nor his successors could reduce the rajahs of Seringapatam, Chitteldroog, Ickery or Bednore and others, who maintained their independence, until Saadut-Olla Khan, (who Bahadoor Shah appointed Soobah of the two Carnatics in 1710,) by collecting all his force from Payen-Ghaut, Cuddapa and Serah, obliged them to pay tribute in that year. Of these, at the period we speak of (1704), *Mysore* or Seringapatam we see was nearly independent, *Bednore* and *Soonda* were equally so, and were too near the Marhattas to be reduced to a regular tribute, and we find they resisted both, generally with success. *Chitteldroog* at times paid reluctant contributions to one or other; and the chiefs of *Mallialum* and *Travancore* are not even enumerated in the Dufter of the Deckan. Their claims on the former under the word *Calicut*, are indeed some years afterwards mentioned as a matter of doubtful acquisition; and the claims on *Travancore* could only arise from the paramount pretensions of Madura, which under the head of Trichinopoly, together with Tanjore, form two Circars in that record.

21. It has been already observed, that Tanjore and Trichinopoly were not included in the province of Beejapore in the register; though it is highly probable, that on the first expedition of Zoolfucar Khan, they might have been considered as such, since Eckojee's possession of the former was effected under the authority from Beejapoor only [a few] years before; but it is not known that any tribute was exacted from them previous to that invasion. Zoolfucar, however, undoubtedly laid under heavy contributions both countries, and though the Marhattas of Tanjore are accused of keeping aloof during the siege of Gingee, yet it is highly probable, (what is indeed alleged,) that influenced by ties of consanguinity, some degree of assistance clandestinely furnished to their countrymen at Gingee, had drawn the vengeance of the conquerors on them; and in the contentions about Tanjore of late years, we find a perwanna* of Zoolfucar Khan quoted as authority for the

* History of the Management of the East India Company quoted from memory, but the work cannot be referred to here.

paramount claim of the Nabob of the Carnatic on that country; yet these expeditions appear to have been rather desultory, and intended to raise supplies, than to make a *settlement of tribute*, which we find a few years afterwards exacted under a more systematic rule.

22. Trichinopoly at this time was under a weak regency, managed by a woman, and from the large sums rated in the register, we may presume the tribute actually levied was very heavy. As from about this period we hear no longer of the wars and depredations of the Madurans and Mysoreans, we may suppose that they were considered under the protection of the Moguls. Mysore had got possession indeed of Salem, Parmutty, Namcul and Darampoory,* but it is only in the next reign we find Dodda-Daba Raja seizing on Coimbatour. Shortly after the Dewan-Fouzdar, (for he united both offices in his own person,) Saadut-Oolla, had enforced, it is said, a tribute from Mysore. In the civil contentions that agitated the empire at this time, it is difficult to procure further documents to explain these transactions.

23. The sudden incursions of the Gatka Marhatta† chiefs had at one time alarmed Mysore, and put Seringapatam in danger. It is probable these lawless freebooters (for such they are by all parties described to be) had made this expedition from Gingee, and is the same mentioned in the Madras Records; but after the capture of that place, and during the incessant predatory war that was carried on through the Carnatic by the Marhattas, denominated in the story of the times “the wars of Santa and Dana,” there is room to think, that the proper country of Mysore enjoyed a degree of tranquillity and security little known at this time by the other provinces.

24. It was in this interval then that we may imagine Chick-Deo applied himself to settle his country, to consolidate its resources, and to establish those improvements and regulations which still distinguish his name among the ablest and most beneficent princes of these coun-

* Sattimunglum and its district is doubtful; we may therefore infer that the Mysore territory at this period extended no further to the South than to the present limits of the Passes of Guzzelhutty, Caveripoorum, &c. The more Northern parts of Barramah are supposed to have been dependent on Colar, as Amboor, &c. A complete translation of the Madura Memoir will throw further light on this part.

† See Memoir of the Mysore family, and of the Calala family.

tries. Even the Emperor appears to have courted his neutrality at least, and only four years before his death, the title of *Jug-A. D. 1700.* *Deo-Rayel*, and a royal signet being conferred on him.

The *Naik of Maissur** for the first time assumed the honors of royalty by ascending a throne; a measure which so wily a politician would scarcely have ventured on without the assurance of the Emperor's concurrence; or at least, that it would not be followed by the vengeance exercised towards his brother of Bednore some years before, for an ill-timed assumption of the same distinctions.†

25. We may then consider the territory, the title, and the resources of Mysore fully established at the demise of this prince; its extent being 28,416 square miles and 101 districts of a revenue‡ of ——— under an economy still more productive than that of the present day, if allowance be made for ruined villages and the decrease of the value of money since. This in the midst of a fierce and bloody war, which after ravaging the whole Deckan for 10 years, and at this moment promising no termination, with the new Mogul government (still contending for the paramount authority it had scarcely established) on the

North and East, the Bednore, Chittledroog and Malabar chiefs, and the weak state of Trichinopoly covering it from the West to the South, entirely insulated by itself on the height of the Ghauts, at the death of Chick Deo, Mysore commanded a respect which was felt by the most powerful, and kept its rivals among the native chiefs of the Carnatic in awe.

Limits of the Mysore dominions in 1704, see Map No. 2.

APPENDIX No. 1.

Historical Account of the establishment of the Europeans at Madras or Chinnapatam, from a Marhatta Manuscript, communicated by one of the ancient Provincial Officers in April 1802. Translated by CAVELLY VENKATA BORIA, Bramin.

The Raja Streeranga Rayel reigned for the space of six years and two months, from the Fusly 1049 up to the month of Avanee A. D. 1639. of 1056. In this year Poonamelle was under the A. S. 1562.

* Also the Madras Records, A. D. ——— where he is denominated the Naik of Maissur.

† Bednore Memoir.

‡ See list of the Mysore districts at this period, Appendix No. 6.

management and in the possession of the poligar of the Damarla* family.

At this period, the Merchants of the English Company, who resided at Visakapatam, proposing to build a cotee to carry on their commerce on the sea-coast, made proposals to build a cotee,† (factory,) seeking there permission to form their establishment in some convenient place of the coast under their protection. The poligars agreeing to their request, ceded the four undermentioned villages, together with Madras Coopum, on condition of paying them 1200 Madras pagodas, besides the additional expence of supporting the holy pagodas.

This grant and conditions were engraved upon a gold plate, (for preservation as a record,) which they delivered to them with authority to establish a daroolzarib, (or mint house,) for coining carak or Madras pagodas.

The four Villages then granted were, viz. :—

- | | | |
|----------------------------|---|--|
| 1. Mouza Madras Coopum,... | { | They built a <i>cottes</i> on the land of this village, which is named Madras. |
| 2. Ditto Chenak Coopum,... | | On the land of this village is situated Mootaul and Pagdalpetta. |
| 3. Ditto Maleput, | | The soil of this village is made use of to make salt. |

In the Fusly year 1056, Streeranga, Rayel‡ was dethroned, and his dominions possessed by the Mussulmans. In the reign of A. D. 1647. Sultan Abdool Hussain Jaanum Soobah, the English merchants having lately built a cotee, (or house of commerce,) now wished to build a fort; for this purpose they despatched Cassa Vee Runna as vakeel (or ambassador) to the presence of the aforesaid Jaanum Soobah. On his arrival, the Soobah being informed, by the address of the ambassador, of the wishes and expectations of the English merchants, taking their request into his serious consideration, he bestowed his perwanna, granting the above four villages as an *enam* (free gift) to them, with

* The ancestor of the present Calastry Rajah.

† Cotee, a house of commerce or factory, different from cotta (tell,) a fort.

‡ This Streeranga-Rayel seems to have been one of the kings of Chandergherry, perhaps the last. This is the only branch of the royal family of which I have not yet got a regular account of succession, but I have hopes of getting it; the last of them had abandoned Pennaconda some years before (1804.) List of their successions have been since obtained, (1810.)

permission to erect a fort, and to establish a daroolzarib, (or mint house to stamp) on condition of their paying yearly into his treasury, the sums of 1200 Madras pagodas. He then dismissed the vakeel, honorably, with the privilege of palanquin, umbrella, biruck varnava,* and toodom. Afterwards the English merchants, agreeable to the permission of the Jaanum Soobah, began to build a fort in the Fusly A. D. 1650. 1059; at this time an officer named Podellee Lingapa, had A. S. 1572 succeeded to the office of Soobadar, and managed the revenues of the Soobahs of Seera, Cadapa, and Canchee.

In the forms of the Mussulman management of revenue, the term *caamil* is applied to the amount of revenues collected and accounted for to the administration for the time of the Rayels, and not attached to districts. At this time their revenue was not included in the *jumma caamil* of Podellee Lingapa; but Tripalkanee was granted as a jaghire under the management of Podellee Lingapa under the government of Islaum, and is therefore included in the *jumma caamil*, or rental; therefore this village was engaged by the above vakeel during his life, and upon his death, it was assumed by the A. D. 1685. A. S. 1607. English Company in the Fusly 1094.

In the Fusly 1095 and Achaya Cycle year, Zoolfucar Cawn, distinguished by the title of Cawn Bahauder, advancing into this A. D. 1686. A. S. 1608. country with an immense force, and continued for 12 years employed on the expedition and siege of the fort of Gingee.† At last having reduced that fortress, he appointed Davood Cawn to govern the Carnatic. During his management, the English Company cultivating friendship with him, obtained permission to coin silver rupees.‡ They also about this time got the following villages from the district of the amildar of Poonamellee, viz. :—

					<i>Caamil.</i>
1. Mouza Agamoor,	..	...	...	...	Pags. 325 0
2. Ditto Parsewauk,	...	...	..	...	... 180 5
3. Ditto Tandewauk,	...	...	...	...	... 400 10

* Several kinds of military music, significant of military distinction.

† Gingee was at last taken in the Fusly year 1110, or A. D. 1700, A. S. 1623.

‡ The translator, (a Hindoo), had rendered the Arabic words for *Mint* CAROOL ZORUB, (literally *Stamping, house,*) a mint to strike gold coins. It seems from the context that the English had the privilege of coining gold only, and hence his error, which is set right.—Eds.

In the Fusly of 1127, the English Company, with the consent of
 A. D. 1717. Sadaoola Cawn, then Soobedar, and the amildar of
 A. S. 1639. Poonamellee, received the following villages of the Poonamellee district, viz.:—

						<i>Caamil.</i>
1. Mouza Trivatore,	...	...	...	...	Pags. 220	6
2. Ditto Sant Kaud,	...	...	...	...	...	232 6
3. Ditto Connewauk,	...	...	...	...	...	10Q 0
4. Ditto Salvara, ...	...	...	...	...	...	93 8
5. Ditto Loongombauk,	...	...	...	..	...	260 8

In the Fusly of 1149, in the management of Sufdar Ally Cawn,
 A. D. 1739. the English Company got the following villages from the
 A. S. 1661. Poonamellee district, viz.:—

						<i>Caamil.</i>
1. Mouza Brumapore,	...	...	...	...	Pags. 114	12
1. Ditto Sat Coopum,	...	...	...	...	...	125 6
2. Ditto Adayavaram,	..	...	...	...	...	205 6
4. Ditto Poodpauk, ...	...	...	...	...	...	105 3
5. Ditto Vepary, ...	..	...	...	...	...	25 3

These five villages were granted to the English Company during the Government of ———, Governor of Madras. At the same time the above Cawn granted a village called Coodpauk, (now called Chintadrypetta,) as a jagheer to the Governor's interpreter, which he enjoyed during life, when afterwards his jagheer was assumed by the Company.

In the Fusly 1157, the French came with an armament and captured the fort from the Company, after which, in the Fusly of
 A. D. 1744. 1158, the English Company brought troops and recaptured
 A. S. 1745. their own fort, defeating the enemy, and obliging them to
 A. D. 1666. fly. During the troubles of these captures, the Company
 A. S. 1667. lost their vouchers and purwannas for the grants and jagheer, being plundered by the enemy.

Afterwards, the Nabob Shahmut Jung Bahadoor and Sampat Row granted Mylapore and some other villages, together with the customs and sayar, viz.:—

						<i>Caamil.</i>
1. Mouza Mylapore,	..	...	...	...	Pags. 241	8
2. Ditto Mamalom,	..	...	...	...	...	710 0
3. Ditto Alatore,...	...	...	..	...	...	113 14
4. Ditto Numdumbauk, ...	...	...	...	...	...	126 4

						<i>Caamil.</i>
5. Ditto Pallagarrum, ... ..	...	...	...	...	668	$\frac{3}{2}$
6. Ditto Chennamongol, with the customs, ... ..	...	...	...	...	„	$\frac{3}{2}$
7. Ditto Revenue of the village, ...	138	6	}	2,265	$\frac{1}{2}$	
Customs of the Mint, ...	2,136	10 $\frac{1}{2}$				
8. Ditto Settee Cuddee, ... ..	...	...	...	...	14	4

In the Fusly 1160, in the time of governor Chanderson, when Nasir Jung advanced into this country, the Nabob Mahomed Ally Cawn bestowed the whole district of Poonamellee in jagheer on the English Company.

In the Fusly 1166, during the government of Lord Pigot, Mahomed A. D. 1752. Ally Cawn then granted the Nabob to the English Com-
A. S. 1674. pany, and also ceded the district of Saat Maganum.

In the Fusly 1173, and in the month of Alpissee, by the advice of
A. D. 1759. Meer Hassadoola Cawn, Mahomed Ally Cawn granted in
A. S. 1681. jagheer the district of Canchee and some other purgunnas, amounting to four lacks of pagodas.

APPENDIX No. 2.

Extracts from Historical Documents, confirming the Account of the expulsion of the Hindoo Naiks of Tanjore, by the Marhatta Chief Eckojee.

MS. Madura History, page 24.—Chokanaad Naig, 8th King.

About this time, *Chengamaul-Daus*, who had fled to *Sátar*, brought from thence the king of the Marhatta's brother, *Ya-ko-jee*, with 2000 horse, who entered Tanjore without opposition; but finding that the kingdom was fertile, and that *Chengamala-Daus* had no people of his own, *Ya-ko-jee* anxious to possess himself of the sovereignty, sought an opportunity to assassinate him. Having smelt of this plot, he escaped to Mysore, where he led an obscure life.

APPENDIX No. 3.

Extract from the Naraputty Vijium, page 30, a Tamul MS.

Afterwards the king of the *Bosalla Darum* brought abundance of troops of all kinds from the court in the Northern division, conquered *Compa-Goudoo*; the *Rajah* of *Magadee*, forcibly took possession of his capital *Magadee* and another city called *Bengooloor*, and there established himself in the government of that conquered country.

At this time, a Raja named *Veejaya-Ragavarauze* of the *Ballega* caste ruled at Tanjore, whose ancestors were established in that state by *Kistna-Rayel* on a very honorable footing. The king of *Madura* proud of the strength of his army, suddenly marched against him, put *Veejaya-Rauze* to death, and returned after this victory to his capital. The son of *Veejaya-Ragavaraja*, named *Chengamala Naik*, sent his minister as ambassador, who made all possible haste to Bengalore, where he came into the presence of *Ekojee*, and represented thus: I am the chief minister of *Chengamalla Naik*, king of Tanjore, who is my lord, and being attacked and deprived of his country by the lord of *Madura*, has sent to request your aid and support with all your forces to conquer his enemy, for which he undertakes to defray the field charges of your troops.

Ekojee upon this representation of the minister, consented to his proposal; he then sent to *Chickadava-Raja*, signifying his having engaged to go to the assistance of Tanjore, and the necessity that he should be in condition to fulfil his engagements to the utmost in every sense. *Ekojee*, therefore, for a sum sufficient for the disbursements of his troops, made over to *Chickadava Raja*, his district of *Bangalore* for 1,200,000 rupees, and on receiving payment thereof, he marched. On his arrival near Tanjore, he wrote to the lord of that city to discharge the arrears of 5000 of his cavalry; the demand was complied with, and he received sufficient to pay his troops for one month. Then under the pretext of bringing more forces, he returned from thence back, and having intelligence of the state of *Aranee*, he suddenly attacked that fort, got possession of it, putting the garrison to death, and placed *Vadajee*, one of his officers there, with a force to maintain it. He then went to Tanjore with only about 200 horse, and represented to the Tanjore lord, that his troops being in arrears to a very large amount, they had refused to obey his orders until their balance was discharged; but if he would now advance him sufficient to discharge the balance of two months, he swore to bring his whole army to reduce his enemy, and to obey at all times his commands. He then took an oath at *Coombaconum* in the divine presence of God, upon which *Chengamalla Raja* paid him the money he wanted, requesting him to hasten by all means to march against *Madura*; but the ungrateful *Ekojee*, who had privately leagued with the *Madura* king, then requested, that having on his account and for his service made over his country to *Chickadava Raja*, and being obliged to carry his family along with him to the field, he would grant him a place where they

might reside in security in his absence, as he was preparing to march within a few days in a fortunate time towards *Madura*, to attack the enemy; whereupon, with the consent of *Chengamalla Raja*, being admitted with all his forces into the fort, he immediately placed his guards on all the places of importance, and then intimidated the Raja so much by threats, that if he did not leave the place, by force to deliver him up to his enemy, the king of *Madura*, that after this dreadful* conversation, *Echojee* forced him to leave the city with only the dress he wore, leaving all his property behind, together with all the royal family, who on some private carriages escorted by his troops, were sent out of the district.

This great prince† not able to evade this misfortune which was destined by God, submitted to this degradation, and in this poor abject condition, proceeded with all his family to *Streerangapatam*. Being ashamed to behold *Chickadava Raja*, he remained privately in a house of one of the inhabitants, which the Raja being informed of, came to this lord, consoled and encouraged him not to be uneasy for the loss of his fortune, and granted him his protection, assigning some villages for his maintenance.

APPENDIX No. 4.

Translation of an Extract from a Tamul M.S. History of the Marhatta Family of Tanjore, containing an account of the revolution by which the Marhatta Bhosla Family was established at Tanjore by Echojee.

Now the descent of *Echojee Raja* who conquered Tanjore, has already been fully mentioned in the history of the *Bhosala Vamshum*.‡

This *Echojee Rajah* being the fourth of that name, when he was ruling at *Bangalore* the second time, received a letter from *Ali Abdil Shah* of *Beejapoor*, mentioning, “that *Veejaya-Ragava Naiher* of Tanjore being besieged by the *Trichinopoly Naikers*, a vakeel has come to me from Tanjore on that account; therefore we send two viziers, named *Cuddil-Alas-Khan* and *Abdul Ali*, together with some troops, and you should also go along with them with your army, attack the army of the *Naikers* of *Trichinopoly*, and drive them away.

* Literally translated.

† When in Mysore in 1807, enquiry was made in vain for the descendants of this family. It since appears, that a person belonging to them, or claiming to be such, was noticed in certain communications to Government in 1805 from the Southward.

‡ *Bhosala-Vamshum*, or the Generation or Race of the *Bhosala* Family.

You must then put the Tanjore people under arrest* till they collect the balance of the *Paudshah's* tribute.† You should also collect the amount of the expences of the army, and send it to the presence."

On reading this letter, he immediately left *Bangalore* fort in charge of *Chawalakaattee-Soorya-Row*, and marched along with the two viziers to Tanjore; in the way he took the fort of *Arnee*, thence he marched to Tanjore, defeated the army of the *Naikers*, and drove them away. He then laid the *mogalloo* on Tanjore, and encamped at *Treemoollavoel*, in order to collect the money of the tribute, and the expences of the armies; keeping the two viziers, *Caudil-Alas-Khan* and *Abdul Ali*, without the fort to fix and collect the amount of the money.

It was while this Rajah was encamped at *Treemoollavoel* at this A. D. 1674. time, that his second son *Surpojee-Rajah* was born, the third A. S. 1596. person of this name in the *Salleevahan Sakam*, 1596, in the Cycle year *Rachasa*; these circumstances have been already mentioned.

Veejaya-Ragava-Naik and his relations of Tanjore delaying to pay the money of the tribute, and being involved in contentions among themselves about the supreme‡ authority in the state, disputing who was chief, dismissed the vakeel (who had been lately sent to *Beejapoor*.) with the view of deceiving the two viziers, who resided without the fort. This intrigue and deception being resented by his minister§ and the vakeel, they were discontented, and represented to the two viziers, "that the *Naikers* would not listen to their advice, and evinced much weakness and folly in their conduct, which was now so bad, that they were likely to ruin the country; that they were at variance with each other, and were not able to manage the *Samstaan*; that they (the viziers) ought therefore to take the country under their direction, as the *Naikers*, to the number of 15 or 20 people, were quarrelling without any substantial reason, and ready to destroy each other; that the people were no longer under the command of the *Naikers*, and no longer respected their authority, and designed to seize on the fort, and to cut off the *Naikers* within two days; and recommended therefore to them to rule the kingdom, (or assume the government.)"

* Arrest, *mogalloo*, (Tam.) The original runs literally "You will lay the *mogalloo* on the Tanjore people till, &c. &c." The Malabar *mogalloo* seems to be the *derna* of the Northern Hindoos.

† *Peishkush*.

‡ Original, "Am I great, or are you great?"

§ Muntree, the chief minister.

The two viziers came to no resolution for two days, while they examined into the accuracy of these representations, which they found were very true, and that all the officers of the country were speaking in the same manner, (or held the same sentiments.) The viziers then replied to the vakeel and chief minister, "we cannot do this business ourselves; but we will give you a letter which you should both carry and deliver to *Eckojee Rajah*, who is now at *Treemullavoel*, and you can bring him, then all the business will be settled." Accordingly the vakeel and ministers took that letter, and going to *Treemullavoel*, delivered it to *Eckojee Rajah*, acquainting him of the misconduct of the *Naiker's* warriors, and relations of the family who were in Tanjore fort; thereupon *Eckojee Rajah* set out secretly with some of his troops to Tanjore, and after conferring with the two viziers, went into the fort of Tanjore, accompanied by them in the *Salleevahan Sakam* year 1596, in the cycle *Rachasa* in the month of *Mausee* in the day of *Suptamee* (or 7th) in the *Sookala-Putchum*. On that day he came by the road leading to the gate of Tanjore fort, thence now called *Ali-Durwaja*; after advancing a short way, the *Naik*, his relations, their followers and warriors from the *Aramana* (or palace) advanced to oppose the *Rajah* sword in hand. In this conflict the *Naik* of Tanjore and seven or eight of his cousins were slain, the remaining *Naikers* fled in great confusion, whereupon the fort remained under his command.

Then the two viziers composed the troubles which still in some degree prevailed in the fort, and then came out by the East-gate and encamped without the fort; as they came out by this gate with victory, therefore it is called *Futteh Durwaja*. The *Rajah* then delivered the fort into the charge of the late chief minister, and went and encamped without the fort with the two viziers.

The *Rajah* then asked liberty of the two viziers to return to Bangalore, but they earnestly requested him to stay until their own differences were adjusted, for they were disputing to which of them this country should now belong.

Affairs were thus in suspense for two months, when intelligence arrived that *Aurungzebe* having conquered all the several *Padshahs* of *Deckan*, except *Beejapoor*, there was reason to suspect that the government of *Beejapoor* also must soon fall. *Abdul-Ali* and *Cawdil Alas Khan* therefore considered if they remained disunited and quarrelling among themselves, after *Eckojee Rajah's* departure they could not preserve the fort; that the *Naikers* of Trichinopoly were valiant men;

and even that *Ali-Adil-Shah* would never permit of this country falling into their possession. On the other side, that *Echojee Rajah* was a warrior fully able to reduce the people of Trichinopoly; that his brother *Seevajee Rajah* also was a man of such great power in his country, that *Ali-Adil-Shah* was not able to contend with them; therefore, they resolved that *Echojee Rajah* was the fittest person to rule the kingdom, who would from gratitude pay them due respect and attention for such a service down through future generations.

Having thus considered and determined in their mind, they acquainted *Echojee Rajah* of their sentiments, and satisfied him (or prevailed on him) to acquiesce in their proposals.

Soon after *Echojee Rajah* was seated on the throne of Tanjore in the epoch of *Salleevahan Sakam* 1597, in the A. D. 1675. A. S. 1597. Cycle year *Nala*, in the month of *Chittry*; he then sent to *Ali-Adil-Shah* of *Beejapoor* a *suzzur* (or present) adequate to his rank, and wrote him a letter, signifying that he retained these two viziers with him, that the *Padshah* might not conceive any suspicion of their fidelity. The *Padshah* on receiving this letter and present was extremely pleased, and in reply addressed him a *sunrud*, empowering him to enjoy the country of Tanjore from generation to generation; in this manner he wrote a *sunrud*, and sent it with many kinds of valuable cloths, &c. as presents to *Echojee Rajah*.

Afterwards the people of Trichinopoly came to fight against the *Rajah*, who repelled them, and obtained from them a written grant of the village of *Sondala-Mah*, "for the expense of *betel* and *nuts*." He also fulfilled his engagements to *Cawdil Alas Khan* and *Abdul-Ali*, and continued to rule the kingdom.

In the epoch of *Salleevahan Sakam* 1598, in the cycle year *Pingala* to *Echojee Rajah* was born his third son *Toohojee Rajah*; these three sons were by his eldest wife *Tippa Bauhee Saib* of the *Yengala* caste, and by his younger wife, *Annoo Bauhee Saib*, of the caste of *Mola*, he had a daughter. He also had nine concubines; of them were born seven children, namely:—

- | | | | |
|----------------|--------|--------|--------|
| 1. Chundraban, | 3. ——— | 5. ——— | 7. ——— |
| 2. ——— | 4. ——— | 6. ——— | ——— |

Of these seven sons, the eldest *Chundraban* was a great warrior. Altogether *Echojee Rajah* had ten sons. After ruling for some time he departed this life in the *Salleevahan Sakam* 1604, in the cycle year *Rootrotcaury*; his eldest son *Shahajee Rajah*, (the third of that name,) being appointed to succeed to the government.

APPENDIX No. 5.

Literal Translation from the Memoirs of Sheevajee, of the conference between Sheevajee and his brother Eckojee of Tanjore.

CHAPTER LXXXII.

After this, (the taking of *Chenjee*,) on the other side of *Chendee*, the army encamped at the village of *Ardér* near *Treerundee*, whence a letter was sent to *Eckojee Rajah*, saying, "I have not met your Majesty since I was born, desirous of a meeting, I am come into your neighbourhood, and beg that you will pay me a visit," thereupon *Eckojee Rajah* attended by *Juggunath-Punt-Diwan* and his army came and waited upon *Sheevajee Rajah* in a most respectful manner. Charity was largely distributed, afterwards they both eat out of the same dish, which they continued to do daily, and conversed together in the presence of *Ragoonath Narayen*, and *Dittajee Punt Vakneess*, *Havildar*, and *Bál-Prubhoo-Cheetneess* and *Kumbeer-Row Shenaputtee* and *Anajee-Ragoonath Mujmoondar*. *Sheevajee Rajah* began to say, "Give to me the half of the *Chendaverry** dominions and take you the other half." *Eckojee Rajah* answered, "You must then give to me the half of the domains acquired in the *Désh*,† (country of *Marhattas*)."
Sheevajee replied, "Our father acquired nothing in the *Désh*." *Eckojee Rajah* rejoined, "Formerly territories were acquired by our father in the *Désh*, deliver the half to me." *Sheevajee* repeated, "Our senior acquired nothing in the *Désh*." Thus were words and disputes carried on for fifteen days. At last *Eckojee Rajah* declared, "We must fight for it, within fifteen days I shall complete an army and call upon you; prepare yourself." Having so spoken, he set off in anger. *Sheevajee Rajah* for the sake of peace followed out of his tent, but was not heard by *Eckojee*, who mounting his horse rode on to *Chendaver*. As far as *Chendaver*, *Sheevajee Rajah* ordered these officers to go in his escort; namely, *Humber*, *Row-Shenaputtee* and *Manajee Moré* and *Roopajee Bhonsla*, and *Anajee Ragoonath*. They went as far as *Chendaver*,

* The district of Tanjore.

† Alluding to their first acquisition of *Poona* and *Poorender*, which in fact were not acquired by *Shahjee*, but descended from his ancestors, the dispute, therefore, here turns upon the point whether the acquisitions of a father was to be divided among his sons: leaving the ancient patrimony for the eldest according to *Sheevajee's* assertion," or "that the whole lands without distinction possessed by a person should be equally divided among his sons." The former distinction is well known in the *Laws of Scotland* under the distinction of *Heritable Property*, or *Hereditary*, and of conquest or personal estate and property.

where they were presented with cloths and ornaments as marks of distinction, and thence they took leave.

CHAPTER LXXXIII.

Thereafter *Sheevajee Rajah* leaving *Ragoonath Punt* and the *Shenaputtee* with the army, went to the *Désh* (native land), accompanied by *Dittajee Punt*, and by *Bal-Prubhoo-Cheetneess* and by *Manajee Moré Panch-Hazaree* (of 5000,) *Anajes Moré* and *Annund Row, Panch-Hazaree*, and he arrived at *Punhala*.

The army behind was attacked by *Eckojee Rajah's* troops, consisting of twenty thousand cavalry and fifty thousand fire-lockmen, and commanded by *Jaggunath Punt Diwan*, by *Bheemajee Rajah*, by *Roybanjee Rajah*, and other officers of rank. These armies fought for fifteen days. One day the cavalry (of *Sheevajee*) charged the four sides and killed two thousand infantry; disorder ensued (in *Eckojee's* lines); *Jaggunath Punt* and *Bheemajee Rajah* and *Roybanjee Rajah*, the highest officers, were taken prisoners; the infantry fled; the army of *Chendaver* was destroyed; a thousand troopers and bramins and Marhattas were killed. On *Ragoonath Punt's* side, (*i. e. Sheevajee's*), five hundred troopers lost their lives in the victory.

CHAPTER LXXXIV.

After that a treaty of peace was concluded, by which the half of the country north of the *Cavery*, including the forts and palaces of *Bálá-poor** *Kolar*, *Maharaj Gudd*, and *Juggdév Gudd*, and *Carnatic Gudd* and others were ceded to *Sheevajee*. The *Kamaveeshdar* of *Arnee*, named *Odajee Bháskur*, who had eight sons, viz. *Soobén-Row* and *Neevas-Row*, and the rest had been gifted by *Shahjee Rajah* with a district including the fort of *Vunneedoorg* under these new cessions. This gifted tract or *enamt* no person molested.

The fort of *Veloor* fell (to *Sheevajee's* troops). In that quarter *Ragoonath Narayen* remained at *Chundee* and *Humbeer Row Shenaputtee* returned with the army towards their own country. In the *Carnatic* a territory (yielding an annual revenue) of fifty lacs of *huns* was acquired.

* Ballapoor and Colar are well known to be above the Ghauts; the other guddies are in the Payen Ghaut, or Barramah, and we see Bangalore is not included, which confirms the account of its being made over by *Eckojee* to the *Mysore Chief*, previous to his marching to *Tanjore*.

† The *Arnee jagheer* has been a matter of discussion of late years; a person in possession of heritable property cannot divide it; but the latter, as his own acquisition or conquest, he may divide or bequeath as he thinks proper.

From the Asaphia Dafter.	Jumma Caamil.		Remarks, various readings from the Hakeekut Hindostan, and different Copies of Register.	Revenues Estimated by the Schedules of 1799.	
	Rupees.	As.		Canty. Pags.	Rupees at 3 rupees per Pagoda.
1 Islampoor, commonly called Bangalore,	3,21,732	0	The same by the Hakeekut Hindostan,	55,000	1,65,000
2 Antore or Intore (Amboor, Country of Jugdeo,) ..	43,200	0	The same ditto ditto,		
3 Innaconda or Annicondah,	64,800	0	Anagoondy, See List of Zemindars B. No. 22,	60,101	1,80,303
4 Erchalty,	21,600	0	Arsetly Arhey, Erchalty (or Arzee Hakeekat,)		
5 Baugloor,	10,800	0	Maugloor, Nangloor, See B. No. 19,	3,000	9,000
6 Ballapoor Pedda, (or Burra,) ..	2,09,696	13	.....	44,000	13,200
7 Ballapoor Chinna, (or Chota,) ..	32,400	0	And for the Zemindary See B. No. 12, { 1,92,500 } 2,24,900	8,000	24,000
8 Palmedkoate,	5,400	0	Palamcotta (Moolk Jugdeo,)		
9 Panawur or { 2 Mahals, ..	2,53,793	12	No. 38, Schedule No. 12 and 13 Hakeekut, ..		
10 Manawur,					
11 Badihall or Madihall, ..	84,277	0	Boodihall, No. 3, ditto, ..	84,277	
12 Purour,	46,632	0	Baroor, No. 13, ditto, ..	46,632	
13 Lookhrai Samunder, ..	6,480	0	No. 14, ditto, ..	6,480	
14 Munconda,	4,15,288	14	Boayencond, Nain-Gondar, Painagonda, ..	66,000	1,98,000
15 Benakeh,	6,480	0	Timink, Namauk, Saag, ..		
16 Muncundel,	24,375	0	Maunconda,	6,480	
17 Singour, (Toomkoor,) ..	3,22,255	0	Toomcoor, (No. 2 Hakeekut,) ..	24,375	
18 Wengulcoate,	28,957	0	Waingulconnah, (No. 18 ditto,) ..	2,22,255	54,000
19 Dhermadur,	67,510	0	Durmawur or Durmaveram, ..	28,957	
20 Deonhulli,	27,000	0	Deonhulli, No. 17, B. .. { 66,750 } 93,750	67,530	60,135
				20,045	

Circar Beegapoor, Carnatic,—55-Purgunnahs or Mahals.—(Continued.)

No.	From the Asaphia Duffar.	Jumma Caamil.		Remarks, various readings from the Hakeekut Hindostan, and different Copies of Register.	Hak. Hind.	Revenues Estimated by the Schedules of 1799.	
		Ra.	As.			Canty. Pags.	Rupces at 3 ru- pees per Pagoda.
21	Beemoolnoor (com. Jugum- lore or Be-	}	}	Formerly Jaganaikhully, .. .. .	..	22,500	
22	.. .. .			.. .. .	..	..
23	.. .. .			.. .. .	..	..
24	.. .. .			.. .. .	..	..
25	.. .. .			.. .. .	..	..
26	Soondoor (now to the Mah- ratta,)	3,31,031	14	Moorahurry Droof, Ooroo Malloor (Huldoorg Nailoor,) .. .. .	..	3,31,031	
27	Soondikate,	5,791	8	Submaranahully (No. 23 Hakeekut,) .. .. .	..	57,091	
28	Sudul-Milkarijen,	4,59,835	2	Serah or Sirpa, .. .. .	..	4,59,835	
29	Sanora-Nagur,	4,79,254	2	.. .. .	..	..
30	Shevagunga,	66,675	0	.. .. .	..	..
31	Koondiguna, (perhaps Chan- dergeery,)	45,000	0	Soonder (Hak. No. 25,) .. .. .	..	66,675	
32	Galgeera, (or Golskire,)	3,250	0	Soondicoon. Soondicatta .. .. .	..	45,000	
33	Gunge-Nelloor,	6,968	0	27. .. .. .	..	3,250	
34	Goorpulli,	23,335	0	.. .. .	..	6,950	
35	Khaneeloor,	75,000	0	.. .. .	..	33,375	
36	Coobar including Goorgul,	5,400	0	Cundakeira, (No. 30 ditto,) .. .. .	..	75,000	
37	Koondrowli, (or Goondrouli,)	4,968	0	.. .. .	..	..
38	Colour,	41,255	0	.. .. .	..	..
39	Marunhulli,	21,625	0	.. .. .	..	..
40	.. .. .	3,93,127	112	.. .. .	..	..
		1,08,000	0			45,000	13,500
		28,125	0				
		4,520	0				

* The sum is omitted, but by the total it appears to be 2,20,756 Rupees.

Circar Begjapoor, Carnatic,—55. Purgunnas or Mahals.—(Continued.)

or.	Jumma Casnil.	Remarks, various readings from the Hakeekat Hindoostan, and different Copies of Register.	Revenues Estimated by the Schedules of 1799.	
			Centy. Pag.	Rupces at 3 Rs. per Pa- goda.
..	12,980 0			
..	2,160 0			
..	1,620 0			
..	62,325 0			
..	56,250 0			
..	1,58,645 0	Nag-Samooder.		
..	4,320 0			
..	21,840 0			
leh	6,840 0			
..	3,18,750 0			
..	34,800 0	Harponbelli.		
..	5,400 0	Hooly Honoor in Bednore.		
	Jumma Casnil, Rupees, 49,40,275			7

Hindoo Chiefs entered in the Daftar of Asaph Jah, as Zemindars or Dependents on Bejapoor-Carnatic, or Soubah of Serah.

No.	Names in the Register, or Daftar Asaphia.	Jumma-Camil in the Daftar.	Various readings, remarks, and explanations as far as can be understood on comparison with the Schedules of the treaty of partition of Mysore, 1799.		Schedule 1799.
			Rupess.	Cent. Page. Rupees.	
1	Seringapatnam, Zemindar of Seringapatam or Mysore,	3,58,51,361	Supposed to be lower Canara, and Bilgha included.	3,58,51,661	
2	Bednoor, ..	1,02,63,636	Balla Ghaut,	1,02,63,636	28,382
3	Soundha, ..	7,33,735	.. Moka ced- .. formerly only	7,30,671	59,377
4	Raidroog, ..	7,20,871	..	Omitted.	87,709
5	Chittardroog, ..	11,25,000	.. Hakekut, ..	11,25,000	1,02,866
6	Heerkutti, ..	75,000	.. (No. 8 Hak.) ..	75,000	1,79,387
7	Cherrimulla, ..	93,750	Jaremulla, Haremulla, (Jaremulla Hak.) ..	93,750	2,63,127
8	Turrikeira, ..	1,72,500	Nurgera, Nattyguddah, (Nurrekeira Hak.) ..	1,72,500	3,08,569
9	Pengwore, ..	93,750	.. Rutungeery, (Ruttungurry Hak.) ..	93,750	
10	Madgurreh, ..	1,23,750	.. Havagudda, (Navogudda Hak.) ..	1,23,750	
11	Manikbala, ..	15,000	.. Bangbala, Naik Mulla, (Naik Mulla, Naik Balla Hak.) ..	15,000	
12	Cheni Ballapoor, ..	1,92,500	.. Chick Ballapoor, See A. No. 7. ..	1,92,500	
13	Goornikaire, ..	75,000	.. Cortieggudda (Cooreygudda Hak.) ..	75,000	
14	Neelporee, ..	5,340	.. Nelloorey, Naloor, (Manvarey Hak.) ..	5,640	
15	Kagilwaree, ..	37,500	.. Hagulwaddy, ..	37,500	86,000
16	Serkunni, ..	93,750	.. Surgee Purgunny, or Bergunny (Deogud Hak.) ..	93,000	
17	Deonhulli, ..	66,750	.. Davulpilly, Dawullhully, No. 20 Sche. ..	Omitted.	

Hindoo Chiefdoms in the Duffer of Asoph Jah, as Zemindars or Dependents on Bejapoor-Carnatic, or Soubah of Serah.---(Continued.)

No.	Names in the Register, or Duffer Asophia.	JummasCaamil in the Duffer.		Various readings, remarks, and explanations as far as can be understood on comparison with the Schedules of the treaty of partition of Mysore, 1799.	No. 53 No.	Sche. Sche.	Schedule 1799.	
		Rupess.	Rupess.				Cant. Page.	Rupess.
18	Anicull, Zemindar of	45,000	0		..	..	10,300	20,900
19	Baagloor, ..	27,500	0		..	..	8,000	9,000
20	Inguskeery, ..	18,750	0		..	..
21	Harpunbulli, ..	10,29,950	0		..	..
22	Inacunda, ..	1,73,550	0		..	..
23	Kunguddi, ..	9,91,165	0		..	..
24	Balbary, ..	86,250	0		..	..
25	Gungudi, ..	2,25,000	0		..	..
26	Goodicottah, ..	1,87,500	0		..	..
27	Senkarghurr, ..	37,500	0		..	..
	Total,	5,35,51,959	3					

copy, ..
Sakargudda, Sakargudd, Sakargudd,

Abstract of the Revenues of the Carnatic according to the Duffier, as divided between the successors of the two separate Nabobships of Serah and Arcot, designed to shew the comparative resources of the two Nabobships, or Great Mogul Divisions of Carnatic.

Serah.	Arcot.
<p>Rupess.</p> <p>47,17,386</p> <p>49,69,624</p> <p>5,25,61,369</p> <p>6,19,48,379</p> <p> <i>{</i> Carnatic, Balla Ghaat, Beejapoor, Carnatic. Balla Ghaat, Hydrabad, Gurramconda, and Gandicot- <i>}</i> ta, &c., but not including Se- <i>{</i> nore nor Adoni. <i>}</i> Zemindars dependant on Beeja- <i>{</i> poor, including Mysore, Bed- <i>}</i> nore and Secunda, <i>{</i> Possessed by Hy- <i>}</i> der's Family as Na- <i>{</i> bobs of Serah. <i>{</i> Exclusive of Malabar which is not <i>}</i> registered. </p>	<p>Rupess.</p> <p>1,37,60,329</p> <p>3,23,33,546</p> <p>4,86,93,875</p> <p> <i>{</i> Carnatic, Hydrabad, Payen Ghaat <i>}</i> from Guntoor to the Coleroon, <i>{</i> South and West to Amboor. <i>}</i> Southern Circars of Tanjore and <i>{</i> Trichinopoly, (including Ma- <i>}</i> dura and Tinnevely.) <i>{</i> Possessed by Maho- <i>}</i> med Ali Khan's <i>{</i> Family as Na- <i>}</i> bobs of Arcot. .. <i>{</i> (Doubtful whether the tribute of <i>}</i> Travancore as a dependency of <i>}</i> Madura be included.) </p>

APPENDIX No. 9.

PROCLAMATION AGAINST THE SLAVE TRADE.

At a Consultation, present William Gyfford, Esq., Agent and Governor, &c. &c.

An order in English, Portuguese, Gentue and Malabar, for preventing the transportation of this country people by sea, and making them slaves in other countries, this day was read and passed, and ordered to be hung up in four public places of this town ; the contents are as follows :

Whereas formerly there hath been an ill custom in this place of shipping off this country-people and making them slaves in other strange countries ; we therefore, the present Governor and Council of Fort St. George, have taken the same into our serious consideration, and do hereby order that for the future, no such thing be done by any person whatsoever resident in this place ; and we do hereby also strictly command all our officers by the water-side, whether they be English, Portuguese, or Gentues, to do their utmost endeavours to prevent the same, or else suffer such punishment either in body or goods as we shall think fit to inflict upon them ; and if any person shall hereafter presume clandestinely to do anything contrary to this our order, by shipping such slaves of this country, and it be proved against him, he shall pay for every slave so shipped off or sent away, fifty pagodas, to be recovered of him in the Choultreys of Madrasspatam, one-third for the use of the Honorable India Company, one-third to the poor, and one-third to the informer. Dated in Fort St. George the 9th day of November, one thousand six hundred and eighty-two.

(Signed) WILLIAM GYFFORD.

*Fort St. George, 1682,
Monday, 13th November, 1682.*

Note on the Osseous Breccia and Deposit in the Caves of Billa Soorgum, Lat. 15° 25', Long. 78° 15', Southern India. By Captain NEWBOLD.

These caves are situated in hills composed of the diamond limestone, and had not hitherto, as far as I can discover, been visited by any European previous to my stumbling upon them. From the roofs of some depend clusters of stalactites, while the sides and floor are encrusted with stalagmite, covered with an ammoniacal and nitrous soil of little specific gravity, brown in colour, and apparently the result of decomposition of the filth of bats and other small animals that lurk in the recesses.

The mouths of the caves are from 46 to 60 feet high ; but diminish before many feet are traversed to semi-circular channels, or fissures of no great length, which it is necessary to traverse on hands and knees.

Among the specimens sent, will be found a gypseous bone breccia, a red indurated marl or mud, somewhat resembling that of the celebrated Kirkdale caverns in Yorkshire, some fossilized bones of small animals with a few fragments of the bones and tusks of animals of larger dimensions, many of which were found at the depth of 18 feet below the floor of the caves, imbedded confusedly in a hard gypseous rock and in red mud, lying under a crust of stalagmite, which is covered by the light animal soil before-mentioned.

I am sorry I cannot send the Society duplicates of the more perfect bones and tusks of the larger animals, which I have reserved for examination in Europe. The bones are broken, but not water-worn : those of the smaller animals are in great quantities.

The specimens now presented, poor and insignificant as they are, may be regarded with some interest as the first offerings on the Society's table from the caves of Southern India, of a deposit analogous in mineral composition, under a similar crust of stalagmite, to that in which Buckland first discovered some of the then most remarkable of his *Reliquæ*, which consisted of the remains of about 300 hyænas, the ox, young elephants, hippopotamus, rhinoceros, horse, bear, wolf, hare, water rat, and several birds : with the dung of hyænas nearly hard as bone, and composed principally of the same substance, phosphate of lime, all confusedly mixed in a loam or mud, or dispersed through the crust of stalagmite which covers it.

From the circumstance of there being no apparent existing cause sufficient to account for the presence of layers of earth, mud, and breccia under a crust of stalagmite, to the depth of 18 feet and more, (for I did not succeed in getting to the solid rock in two caves at this depth,) and the surface of which is in one of the caves 8 feet above the present highest water level of the land in the vicinity, I am inclined to refer the deposit to the tertiary period, probably the pleocene division, in which are classed the osseous breccias of the Mediterranean, the cave deposits of Kirkdale, Sicily, and Australia.

It is highly probable, that a more extensive search into the deposits of the caves of Billa Soorgum, than my avocations would permit, might lead to far more interesting results than are now before the Society; and slight as the clue now afforded may be, it should not be altogether neglected by observers in other parts of India, who may happen to be in the neighbourhood of caves and rock fissures, particularly in those caves in which the floors are covered by stalagmite.

I embrace this opportunity of calling the attention of observers, who may have the opportunity, to the splendid discoveries made by the present talented Secretary of the Geological Society, Mr. E. Forbes, in dredging the bed of the *Ægean*. Similiar researches in the vastly more prolific bed of the Indian Seas would amply reward their labours.

List of Specimens.

- No. 1. Osseous breccia.
2. Red marl or mud imbedding fragments of bones.
3. Irregular cylindrical bodies.
4. More like the dung of animals than any specimen of stalactite; they are found in the mud and loam mixed with the bones.
5. Fragments of bones and tusks, and small bones in an integral state found in red mud and loam, 18 feet below surface.
6. Stalactite, 7 stalagmite, 8 grey as in like layer.

Notes on the Kasia Hills, and People. By Lieut. H. YULE, Bengal Engineers.

A traveller approaching the Kasia Hills from the south, must in spite of the tameness of their general profile, be struck by the singular feature of a high sandstone precipice, which runs like an artificial scarp for miles along their face, with its upper crest straight, sharp and almost perfectly horizontal. Even when the precipice is interrupted for a space by a jungly acclivity, this sharp crest continues equally defined by the sudden cessation of the forest at its level.

As we enter the first low range of limestone hills, if instead of following the beaten road to Cherra Poonjee, which mounts by bold staircases and zigzags to the table land, we turn aside to track the Wa-lingtia, one of the clear hill streams which so soon are to degenerate into dull Bengallee nullas, we shall be better able to judge of Kasia scenery than those, who keeping the highway are so apt to speak disparagingly of the beauty of these hills. For two or three miles the path lies in a narrow gorge. Rocks or woody steeps rise so directly from the water as to leave but a narrow footing. You see by the constantly recurring rapids, how quickly you are ascending. Sometimes, however, you find a broad reach of deep, still water, swarming with the black backs of large fish. In an angle of the rock is perhaps a Kasia fish-trap. An enclosure of bamboos and matting has its narrow entrance fitted with a trap-door, the fisher scatters his bait within, and sits concealed in a little hut, watching till the fish swarm below. He then slips his cord, the door runs down, and he proceeds to land his victims at leisure. Issuing from the defile the river branches on the left, from which flows the smaller stream, (the Wa-lingdeki,) opens the magnificent valley of Mausmai. It is of a horse-shoe form; two-thirds up its steep sides still runs the clear precipice of some eight hundred feet in height, with its even crest, seeming to bar all access to the upper regions. Over it, side by side, with an unbroken fall leap five or six cascades. Through the great height, the white waters seem to descend with a slow, wavering motion. The path through the valley is shaded by groves of the orange and citron, the jack and the betel-palm, mixed with stately forest trees, many of them entwined with pawn, and here or there a huge India rubber tree or banyan. In their shade the pine-apple grows

in profusion ; all seem like the uncultivated gifts of the Creator ; but here and there water-pipes of hollowed betel trunks, carrying a stream for several hundred yards along the hill side, shew that they are not altogether untended. After many ups and downs, we arrive again at the river which divides the valley. The bridge by which we cross is worthy of description, as I believe no account of any thing similar has yet been published.

On the top of a huge boulder by the river side, grows a large India rubber tree, clasping the stone in its multitude of roots. Two or three of the long fibres, whilst still easily pliable, have been stretched across the stream, and their free ends fastened on the other bank. There they have struck firmly into the earth, and now form a *living bridge* of great, and yearly increasing strength. Two great roots run directly one over the other, and the secondary shoots from the upper have been bound round, and grown into the lower, so that the former affords at once a hand-rail and suspending chain, the latter a footway. Other roots have been laced and twisted into a sort of ladder as an ascent from the bank to the bridge. The greatest thickness of the upper root is a foot, from which it tapers to six or eight inches. The length of the bridge is above eighty feet, and its height about twenty above the water in the dry season.

This bridge was constructed by the people of the village of Ringhot, and forms their communication with Cherra during the rains ; the present generation say, it was made by their grandfathers. This was the first and most remarkable bridge of the kind that I saw in the Kasia Hills, and I supposed it to be unique, perhaps half accidental. But, I afterwards found it to be an instance of a regular practice, and saw such bridges in every stage, from that of two slender fibres hung across the stream, to such as I have tried to describe above, and there are not less than half a dozen within as many miles of Cherra. One* I measured ninety feet in clear span. They were generally composed of the roots of two opposite trees, (apparently planted for the purpose), bound together in the middle.

On the Wa-lingtia, or larger branch of the river, whose course we have traced, are several other remarkable bridges. One on the suspension

* Shewn in Plate I.

principle, across a precipitous gorge on the road between *Cherra* and *Tringhai*, is composed of long rattans stretched between two points at a height of forty feet above the river in the dry season. This bridge, when I visited it, was impassable from damage done by last year's floods. The footway was a bundle of small canes laid together, and connected with two larger rattans forming handrails. These were so low and so far apart, that it must be difficult to get on together. I could not estimate the length of this bridge more than two hundred feet between the points of suspension. The *Hill* people are afraid to trust themselves on it, but the *Wārs*, or men of the vallies, cross it drunk or sober, light or laden, with indifference and security. Still further up the river, and near the little village of *Priang*, immediately under *Cherra*, is another specimen of Kasia engineering and ingenuity,—a bridge of about eighty feet span, composed entirely of strong bamboos bent into a semicircular arch, affording a firm footing, and firm rails for the hand.

But to return to our tour of the valley of *Mausmai*. Quitting the river we commence ascending, by a steep and rugged path, one of the narrow spurs that descend from the foot of the precipice which bounds the valley, at a point where it is much diminished in elevation. Leaving behind us the region of pine-apples and betel nuts, two hours of hard climbing brings us to the foot of the cliff, here broken into steps of twenty to thirty feet each in height, which we ascend by many bamboo ladders. These are somewhat rickety, and at times exhibit a woful hiatus among the rungs. From the summit of these ladders a half hour brings us to the table land within two miles of *Cherra Poonjee*. This table land, covered with naked undulating hills, and at intervals of a few miles interrupted by deep and sudden vallies, is the general characteristic of the country as far north as the *Barapani*, a distance of fifty miles. Beyond this, the region towards *Assam* sinks into a tract of low hills covered with dense jungle, and abounding in elephants and malaria. On the east the *Jaintia* country presents great tracts of pasturage, dotted with clumps of fir, and in parts a park-like forest scenery of stately oaks and firs form a noble foreground to the distant view of the snowy mountains seen rising behind the black *Bootan* hills, far beyond the valley of *Assam*. To the westward of *Cherra*, the *Kasia* country may be considered to extend between forty and fifty



miles, being separated, according to common report, from the Garrows by a dense and unpeopled jungle.

A traveller from the south first meets the fir tree in the ravine of the Boga Pani, eighteen miles north of Cherra, but there weak and stunted. The greater part of the country north of this is sprinkled with firs in natural clumps, and sometimes (in the vicinity of iron works) in artificial plantations. In the descent to the Bara Pani the tree attains its utmost height, but in the woodlands of Jaintia, it is found in greatest girth and beauty; not as a tall mast, but gnarled like the oak, and spreading like the cedar, as we have seen some of the Patriarchs of the Highland forests. On the route from Cherra to Assam the oak is poor and scrubby, scarcely recognizable save by its fruit; but to the eastward, though a near inspection shews a difference in the leaf, it has in character, colour and outline, perfectly the aspect of the English oak.

In the deep vallies of the south the vegetation is most abundant and various. Among the most conspicuous species are, the great India rubber tree scattered here and there in the stony bottoms; the rattan winding from trunk to trunk and shooting his pointed head above all his neighbours; higher up the stately sago palm with its branching arms; and in some shady damp nook, shut out from sun and wind, the tree fern with its graceful coronet. Of bamboos there are whole forests, and a difficult matter it is to force a path through their thick basket-work. Of this most useful plant the Kasias discriminate seven species by name. The cowslip, polyanthus, honeysuckle and ivy, with many other plants near akin to old familiar friends, abound in different parts of the higher hills, and the common English rag-weed (or ben-weed of Scotland,) not the least fertile in home associations, is plentiful at Cherra.

The most remarkable phenomenon of any kind in the country is undoubtedly the quantity of rain which falls at Cherra. On a certain occasion thirty inches of rain is said to have fallen at Genoa in 24 hours, and the statement has been doubted; but no one who has measured the amount of rain in the Kasia Hills, can doubt the possibility at least of such a quantity. It is with some hesitation that I write it, but the unexceptionable mode of measurement, and the many times that I have seen my friend (still resident at Cherra,) who registered the fall, take

these remarkable gauges, leave me no room to doubt. In the month August 1841, during five successive days, thirty inches of rain in 24 hours fell at Cherra; and the total fall in the month of August was 264 inches; or, that there may be no mistake, *twenty-two feet* of rain. The gauge was simply a large glass jar, having a funnel fitted with projecting eaves; and the water was measured morning and evening with a cylinder three inches in depth, of equal diameter with the funnel.

During the heavy rains above-mentioned, the proportion of the fall by night to that by day, was generally about 18 to 12.

The formation of the limestone rocks near Cherra gives rise to a curious phenomenon in the disappearance of streams in their hollows. Sometimes a river vanishes in a cleft beneath a high cliff, sometimes falls headlong into a deep circular hollow and is lost to view, reminding one of the gardens of Cambalu,

" Where Alp the sacred river ran
By caverns measureless to man
Down to a sunless sea."

There are at least four such instances in the immediate neighbourhood of Cherra.

Caves are common, as might be expected. In that a little to the east of Pundua, at a trifling height above the plains, in company with two friends from Cherra, I penetrated 1300 paces, without fatigue or difficulty, and others have I believe gone much further. We were compelled to retreat only by a deficiency of oil. Here, says the tradition, a great army entered, bound for the invasion of China, and were heard of no more.

Standing on one of the highest points in the station at Cherra, about sunset, I have seen my shadow cast on a distant bank of white fog, that filled the valley to the eastward, an appearance resembling that of the celebrated giants of the Hartz, and the Stockhorn. The figure was surrounded by a circular iris. The heavy fogs that fill the large valley to the east of Cherra, render this a common phenomenon at sunset. It has since been pointed out to me that any one may witness this on a small scale, in going through the grass at sunrise on a dewy

morning.* Each will see a faint halo surrounding the shadow of his own head.

Another curious appearance at evening, I first observed at Cherra, though I have often since seen it, during the present rainy season, in the Upper Provinces; namely, the distinct imitation of a sunset in the East, so far as shewn in long white rays diverging apparently from a point exactly opposite to the setting sun's position.

During the rains of 1842, when the whole Sylhet country below us had the appearance of a sea, several of the dwellers at Cherra were much struck by the appearance of innumerable lights on the surface of the distant plains; far too many to be accounted for by any theory of villages, and fishing boats. The natives said at once that it was "Shaitan," nor were any of the numerous suggestions on the subject, more plausible.

The thunder-storms, in the months of March and April, last for many hours, and are tremendous indeed, but I do not know that they are more so in the hills than below. Several of the houses in the little stations have been struck by lightning, and during a residence of 18 months there was one fatal accident. In a still afternoon, whilst black clouds were sailing up, and for several minutes before the storm reached us, I have heard, as the prophet did on Carmel, "the sound of abundance of rain," a peculiar rustling noise from the rain quarter. It might possibly have been the fall of the heavy drops on the leaves of the jungle, but I once again in a still cloudy day heard the same rustling sound, somewhat like the flight of many birds, directly over my tent, and the Kasias said immediately that rain was coming, but no rain fell.

A most peculiar and striking aspect is thrown over almost every scene in the upper parts of the country, by the various remarkable monumental stones† which are scattered on every wayside. These are of several kinds, but almost all of them recall strongly those mysterious, solitary or clustered monuments of unknown origin, so long the puzzle and delight of antiquaries, which abound in our native country, and are seen here and there in all parts of Europe and Western Asia. The

* Most observable in riding across a field of green wheat soon after sunrise.—Eds.

† See Plate II. The illustration is an imaginary group of details from various sketches. It shews a greater variety; but by no means so great a number of monuments as many real scenes exhibit.

most common kind in the Kasia country is composed of erect, oblong pillars, sometimes almost quite unhewn, in other instances carefully squared and planted a few feet apart. The number composing one monument is never under three, and runs as high as thirteen ; generally it is *odd*, but not always so. The highest pillar is in the middle (sometimes crowned with a circular disk), and to right and left they gradually diminish. In front of these is what English antiquaries call a *cromlech*, a large flat stone resting on short rough pillars. These form the ordinary roadside resting place of the weary traveller. The blocks are sometimes of great size. The tallest of a thick cluster of pillars in the market place of Murteng in the Jaintia country, rising through the branches of a huge old tree, measured 27 feet in height above the ground. A flat table stone, or *cromlech* near the village of Sailankot, elevated five feet from the earth, measured thirty-two feet by fifteen, and two feet in thickness.

In other instances the monument is a square sarcophagus, composed of four large slabs, resting on their edges and well fitted together, and roofed in by a fifth placed horizontally. In Bell's Circassia, may be seen a drawing of an ancient monument existing in that country, which is an exact representation of a thousand such in the Kasia Hills ; and nearly as exact a description of them, though referring to relics on the eastern bank of Jordan, may be read in Irby and Mangles's Syrian Travels. The sarcophagus is often found in the form of a large slab accurately circular, resting on the heads of many little rough pillars, closely planted together, through whose chinks you may descry certain earthen pots containing the ashes of the family. Belonging to the village of Ringhot, in the valley of Mausmai, deep in the forest, is a great collection of such circular cineraries, so close that one may step from slab to slab for many yards. Rarely, you may see a simple *cairn*, or a pyramid some twenty feet in height, and sometimes one formed in diminishing stories like the common notion of the Tower of Babel, or like the Pyramid of Saccara in Egypt. But the last is probably rather a burning place, than a monument, or at least a combination of the two.

The upright pillars are merely cenotaphs, and if the Kasias are asked why their fathers went to such expense in erecting them, the universal answer is, "To preserve their name." Yet to few indeed among the

thousands can they attach any name. Many of the villages however seem to derive their appellations from such erections, as may be seen from the number commencing with *mau*, which signifies *a stone*; e. g. *manamai*, the stone of the oath, *mau-inlu*, the stone of salt, *mau-flong*, the grassy stone, *maumlú*, the upturned stone, and a score more; *mausmai*, the oath stone, suggests that these pillars were also erected in memory of notable compacts. On asking Umang, a faithful and intelligent servant, the origin of the name, his answer was a striking illustration of many passages in the Old Testament. "There was war," said he, "between Cherra and *mausmai*, and when they made peace and swore to it, they erected a stone as a witness;" (*Sākhi ke wāste*, was his expression). Genesis XXXI. 45, "and Jacob took a stone and set it up for a pillar." Genesis XXXI. 47, "and Laban called it *Jegar-sahadutha* : but Jacob called it *Galeed* [both signifying the *heap of witnesses*]. Genesis XXXI. 51, "and Laban said to Jacob, Behold this heap, and behold this pillar which I have cast betwixt me and thee. This heap is a witness, and this pillar is a witness, that I will not pass over this heap to thee, and that thou shalt not pass over this heap and this pillar to me to do me harm, &c."

See also Joshua XXIV. 26. The name of *maumlú*, the *salt-stone*, is probably of kindred meaning, as the act of eating salt from a sword point is said to be the *Kasia* form of adjuration.

These large stones are also frequently formed into bridges for the passage of brooks, and most picturesque they often are; there is at Nurteng a bridge of this kind, consisting of one stone thirty feet in length.

It is stated by Pemberton, that *Kai* is the real name of the people, and *Kasia* the title bestowed on them by the Bengallees. But the truth is the reverse of this. 'Kasi' is the only name which they acknowledge as that of their country and race. The same language, with no substantial difference, appears to prevail in all their villages, though there are considerable differences of accent, &c. especially between the hill and valley-men. It abounds in nasal sounds, and is spoken with a peculiar jerking tone, which has a singular effect to a stranger. In the Coptic language, it is said (*Edin. Cabinet Library, Egypt, page 377*) "genders and cases are expressed by prefixed syllables, and not by terminations like the languages of Greece and Rome." This is exactly

true ; of the Kasia tongue, genders, cases, numbers, tenses and all grammatical changes, are made by prefixing certain syllables. The masculine prefix is *u*, the feminine *ka*, and the plural *ki*. Thus *u-mya*, a tom-cat, has his feminine *ka-mya*, a tabby, and the plural *ki-mya*, cats of both genders. This prefix cannot I think be considered an article, as it is attached to adjectives and pronouns as well as nouns, e. g. "*u-tí u-kokaráng ;*" *u-bakhráo usím*, that Hornbill (is) a large bird, where the demonstrative, the adjective, and both nouns have the prefix. It is rather the representative of the *terminations* of Latin, German, &c. most of which wear and tear have rubbed from our English tongue.

It is a curious fact, that the people in the broken Hindustani in which they converse with us, *universally* use the future instead of the past tense. Thus to take a very common case, where the ambiguous word "Kal" adds to the puzzle ; "Kal ham jaiga," from a Kasia signifies, not 'I will go to-morrow,' but, 'I went yesterday.' I never could break my servants of this blunder.

A great proportion of the proper names of men are quaint monosyllables, as Tess, Bep, Mang, Sor, Mir, Bi, reminding one irresistibly of Sir Walter's Saxon Hig, the son of Snel. But these are generally euphonized by the prefix into Utess, Ubeh, Usor, &c. They also address each other by the names of their children, as Pabobon, father of Bobon ! Pahaimon, father of Haimon ! The salutation at meeting is singular, "Kublé ! oh God." It has been supposed that this is a profane deification of the person addressed. But this scarcely seems agreeable to the blunt character of the people, and I never could ascertain what they meant by it. It is probably an elliptical expression, the literal signification of which is forgotten, corresponding to *adieu*, or like *good bye*, the derivation of which (God be with you) no one thinks of in using it. They have regular numerals on a decimal scale up to hundreds, but their word for a thousand (*chi-hajár*) seems clearly borrowed from 'hazár.'

In the people perhaps the first thing that strikes a stranger, is their extreme addiction to chewing pawn, and their utter disregard of the traces which its use leaves on their teeth and lips. Indeed they pride themselves on this, saying that "Dogs and Bengalees have white teeth." Every man wears round his neck a thick woollen cord which suspends a fine net of pineapple fibre, a clasp knife, and a pawn-box

with sometimes a comb; a little globular silver-box containing lime to smear the pawn, lies in the net which serves as a pocket, and contains as rare a medley as any school-boy's. A traveller arriving at Cherra has asked what were those numerous stains of blood on the road; the innocent traces of Kasia expectoration. Distances are often estimated by the number of pawns that will be consumed on the road. But an answer to the question, "How far?" once given me by a Kasia with a load on his back, left far behind this and all other vague estimates, except perhaps a Bengallee "Bānk pāni." He said it was "*arsin leih*," or *two goings*; perhaps as far as he could carry his burden with one rest.

The characteristic dress of the people is a short sleeveless shirt of thick cotton cloth, either of the natural colour (unbleached), or striped gaily with blue and red, and always excessively dirty. It has a deep fringe below, and is ornamented on the breast and back with lines of a sort of diamond pattern embroidery, from the edges of which hang certain mystic threads, to the length of which they attach some superstitious importance in purchasing the garment. The shirt closely resembles one figured in Wilkinson's ancient Egyptians, vol. III. p. 345. Over this a few wear a short coatee of cotton or broad cloth, and many wrap a large mantle striped or chequed with broad reddish lines. The latter is their most picturesque costume. Some have a strong penchant for articles of European dress, and their potato merchants generally bring a small invoice of these from Calcutta on their return voyage. I was once entertained by the prime minister of a Raja to the westward, whose sole habiliment, save a cloth round his loins, was a new olive green frock coat (with a velvet collar, if I mistake not). As he threw back the flaps, thrust his thumbs in the armholes, and strutted about, it was not easy to preserve politeness to my host. A very large turban covers the head of the better class; others wear a greasy cap with flaps over the ears, or go bareheaded. The fore part of the head is shaven, and the back hair gathered in a clump on the crown. Chiefs, or the heads of villages generally have a neck-lace of large gilt beads, like our native officers. The women are generally wrapt in a shapeless mantle of striped cotton cloth, with its upper corners tied in a knot across the breast.

The men are seldom tall, generally well made, and shew great strength of limb; of leg in particular. Such doric columns as support

a good fourth-part of the Kasia peasantry, are rarely seen in England. By help of these good props many of the coal porters will carry two maunds from the mine to *Seria ghāt*, a distance of 11 miles. In this muscular developement, they exhibit a remarkable contrast to some other hill tribes of India. Their features can rarely be called handsome, yet there is often a strong attraction in the frank and manly good humour of their broad Tartar faces, flat noses, thick lips and angular eyes. The children are sometimes very good looking, but beauty in women seldom rises beyond a buxom comeliness, and the open mouth discloses a den of horrors. The females have a full or preponderant share, in out-of-door labour of all sorts. It is a lively scene every morning, when numbers of men, women and children hie to the jungle to cut wood, or forage for a part of the household, almost as important here as in Ireland,—the pigs. Nothing is here of the phlegm or dull loquacity of the natives of the plains. All are full of life and spirits, *whistling*, singing, screaming, chasing one another, and in short, *skylarking* in all ways. They dislike early hours, and it is difficult to get them abroad betimes even on extraordinary occasions. They have great powers of industry, but are somewhat capricious in exerting it. Frank and independent in manner, and in spirit too, they have much more manifestly a conscience to distinguish between right and wrong, than any of their neighbours below. Whether they always act up to it is another question, but there were those among my Kasia servants, of whose right feeling, truthfulness, attachment, and strict uprightness according to their light, I shall ever have a pleasing remembrance. They are fond of money, and of trading, and are neither wanting in courage, nor given to quarrelling. They are apt scholars, and of late have shewn a considerable desire for instruction. The heads of a large village near Cherra invited my good friend, Mr. Jones, Missionary at the station, to reside with them, offering to build him a house, if he would do so. During a tour of part of the hills, in which I had the pleasure of accompanying him in 1842, the people listened to his discourse with decorum, and apparently with attention and interest.

The common food of the people in the vicinity of the plains is rice: in the interior rice, millet, maize, with kuchu, and some other roots and grains peculiar to themselves. Dried fish is a universal article of diet, and is brought from below in vast quantities. Those in the

neighbourhood of the British settlement are by no means gross feeders. But I once saw labourers who were at work in the garden, carry off a dead leopard to feast on, with great glee; and in some of the northern villages, a species of caterpillar is eaten, and sold in the markets. They all enjoy flesh occasionally, especially pork; there is always hot roast pork for sale in some corner of the bazar on market day. Some individuals and families have a superstitious objection to different kinds of food, and will not allow such to be brought into their houses. This has a remarkable parallel among a race of Negroes of South Eastern Africa, as the following passage (quoted in the *Edinburgh Review* for January 1837) from Captain Owen's Narrative, will shew. "It is prohibited in many families to eat certain animals' flesh, such as in some beef, in others elephants, others hippopotamus. It is said that if any family transgress this rule, and eat of the forbidden flesh their teeth will drop out," &c. From millet, they make large quantities of spirits, of which I am sorry to say there is a great consumption at all the bazars; and on the evening of Cherra market-day, one may see many riotous parties staggering to the verge of the valley, where in that state they descend the ladders before described, without fear or accident; for the people of the vallies are more addicted to drunkenness than those of the table land. This millet forms the principal grain cultivation in the vallies near Cherra Poonjee. In the end of the cold weather large tracts of the jungle are burnt, and the seed scattered on the stony slopes. The ground gives one or two crops, and then a new tract is prepared in like manner. Under this process the woods in the neighbourhood of Cherra are becoming rapidly thinned.

The Kasias are utterly unacquainted with any art of weaving, nearly all the usual articles of their dress, peculiar as they are, are made for them by other tribes bordering on the Assam valley. They manufacture a small quantity of caoutchouc, which they use principally for smearing baskets in which to keep honey, &c. By the way, the caoutchouc tree answers better than the Banyan to the well known description in Milton (or rather in his authority, Pliny) of the Indian fig. The former can much more reasonably lay claim, to leaves "broad as Amazonian targe" than any which

"To Indian known
In Malabar or Deccan spreads her arms."

The honey is abundant and of unequalled flavour. A hollowed block of wood forms the hive.

As is the case with some European nations, the houses of the people are by no means so dirty as their persons. Generally they are dry, substantial thatched cottages, built of a double wall of broad planks placed vertically in the ground, and with a good boarded floor raised three feet or more from the earth. As they have rarely anything like a window, one sees nothing at first entering, and rarely escapes a bruised head from a collision with one of the massive low beams. The fire is always burning on an earthen hearth in the centre. There is no chimney, but one soon gets accustomed to wood smoke. On a swinging frame over the fire is piled the firewood to dry; the veranda, or space between the two walls, is partly stored with lumber, and partly affords shelter to the fowls, calves and pigs, which last are carefully tended, and attain enormous obesity. The people are unacquainted with the saw, and the large planks (in some of the chief houses more than two feet in breadth) of which their dwellings are built, are tediously and wastefully cut from the tree with an adge.

They use milk in no shape, and it is an article which a traveller making long marches in the country, must learn to do without. Nor are their cattle, whether goats or oxen, though numerous, applied to any useful purpose in their life time, being kept only for slaughter, and especially for sacrifice. Man is the only bearer of burdens. Their husbandry is confined to the hoe, and their grain is thrashed with the flail. All loads the people carry on the back, supported by a belt across the forehead, and in the rains they and their burdens are protected by umbrellas, in the shape of a large hooded shell of matting, which covers the head and the whole of the back. Dogs they are fond of, and always crop the ears and tail. Wild dogs hunting in packs, are commonly reported to exist in some of the vallies; and from the descriptions given me of wild oxen called "U-blé massi," or the cattle of God, existing in the neighbourhood of the Bara Pani, I have little doubt that the Gour will be found in those jungles. The worst feature in the manners of the people, and one likely to be a serious obstacle to the missionary, is the laxity of their marriages; indeed divorce is so frequent that their unions can hardly be honoured with the name of marriage. The husband does not take his bride to his own home, but enters her household, or visits

it occasionally ; he seems merely entertained to continue the family to which his wife belongs. Separation is signified by the exchange of five cowries, and the children abide with the mother. There are, however, instances of more honourable and lasting unions. In consequence of this loose system, we find that generally there is little or no attachment between a grown-up son and his father, as probably the latter has long left his first family, and perhaps others in the interval ; whilst the affection between mother and son is very strong, and all the child's attachment rests with his mother's kin. A Kasia if asked after his father will often tell you that he is dead, meaning only that all connection between them has ceased. I remember once in walking with U-mung above mentioned, he exchanged salutations with a comely lass, younger than himself. On my asking, he said she was his ' Chota ma,' his father's present wife.

Immediately connected with this system, and we may suppose originating in it, is their strange (though not unique) law of succession. The son has no claim to succeed his father, whether it be in the chiefship or in private property. The sister's son has the inheritance. And the Raja's neglected offspring may be a common peasant or labourer, whilst he sees his cousin cherished, as the heir of his father's authority and wealth.

The greatest festivities of the people are funereal ; either at the burning of the dead, or when a Khasia collects the ashes of his family, and erects a monument in their honor. On great occasions of this kind they hold a public dance for several successive days. The numerous performers are recompensed by an ample feast of pork and whisky. The dance is performed either with fans or swords. In the former, the men dance round and round a circle in the market place, or other open space, somewhat monotonously, attitudinizing and brandishing fans. They are all clad in the most brilliant finery that they possess, or can hire ; richly embroidered outer shirts of broadcloth, silken turbans and dhoties, large bangles, heavy silver chains, and gold necklaces with plumes of down or peacock's feathers, and ornamental quivers. In the centre are the village maidens, they form in twos and threes, and set to one another with a comical *pas* of exceeding simplicity, which seems to be performed by raising the heels, and twisting from side to side, on the fore part of both feet, which never leave the ground. Their eyes are

demurely cast to the earth, or on their own finery, and never raised for a moment. They too are loaded with silver chains, tassels, and armlets, and all wear on the head a peculiar circlet of silver, having a tall spear head ornament rising behind. They are swaddled in a long petticoat, as tight as the clothing of a mummy, with an upper garment like a handkerchief passing tight under the right arm, and tied in a knot on the left shoulder. Waist they exhibit none, the figure being a perfect parallelogram. In the sword dance, the men accompanied by music and musquetry, dance and bound, clashing sword and shield, and uttering in chorus a chaunt, at first seemingly distant and sepulchral, but gradually becoming louder and louder, till it bursts into a tremendous unearthly howl; then sinking to a doleful chaunt, again and again rising to wake the echoes. The sword, a strange weapon, is composed of one piece of the coarsest iron, about four feet long, of which one third is handle, the rest blade. The latter has its edge slightly convex, and the back drawn to a peak like the old Turkish scymitar. The handle has two guards, and is grasped at the lower, the hilt passing between the two middle fingers. Yet with this uncouth weapon, so uncouthly held, I have seen a goat in sacrifice cleanly beheaded at a blow.

The village children have a curious gymnastic amusement. The trunk of a young tree, by a cut in the centre is fixed on a pivot at the top of a post about four feet high. Two urchins seizing opposite ends of the pole, run round in the same direction till they have got a proper impetus, and then whirl rapidly, in turn leaping and descending in a very light and graceful manner. The children also spin a regular peg-top, and it is *indigenous*, not an importation. Another of their recreations is an old acquaintance also, which we are surprised to meet with in the far East. A very tall thick bamboo is planted in the ground and well oiled. A silver ornament, or a few rupees, placed at the top, reward the successful climber.

But their favourite amusement in the cold weather is archery. In the trial of skill each village has from time immemorial its established competitor, and with this alone is the contest carried on. The Torophilite meeting is held at each village on alternate market days. The target is pitched at about sixty yards. It is made of an oblong piece of bark, about three feet and a half high by one broad. Four or five

persons generally shoot at once, they draw the arrow to the ear, and the attitudes are often very striking, though to say the truth, they are no Robin Hoods. The bow, the bowstring, the arrow, and the quiver are all made from various species of the all-useful bamboo. When all have shot, the arrows in the target are taken out, and the villagers crowd round the umpire as he distributes them. As each arrow is recognized, the party to which its owner belongs dance and leap about, fencing with their bows, spinning them high in air, and shouting together in a wild cadence. The villager whose arrows are in a minority pays a trifling forfeit of a few cowries.

They shew no very particular courtesy of bearing towards their Rajas. Indeed the latter do not seem to have much power. They have the right of calling on all to bear arms, or send a contribution in case of war; what public revenue they have is derived from fines, and in some cases from trifling dues paid in kind by frequenters of the markets. The chief is the judge, and when he calls for the attendance of any party as criminal, defendant, or witness, he sends as a summons a piece of pork; the pig being probably charged in the loser's bill of costs. Fining is almost universal as a punishment. Occasionally however a man's whole goods are confiscated, whilst he and his family become the slaves of the Raja; and in some rare cases of murder, the criminal is given over to the friends of the slain, for them to wreak their vengeance. The water ordeal used to be a common mode of decision. The opponents with much ceremony plunged their heads under water on opposite sides of a consecrated pool, and he had the right who remained longest under water. I have been told that it was lawful to use the services of practised attorneys in this mode of trial; so that long-winded lawyers have as decided a preference in these regions as they may have elsewhere. The last case of this ordeal, between parties belonging to Cherra Poonjee, occurred five or six years ago, and was fatal to both plaintiff and defendant.

The Kasias have a name for a Supreme, or at least for a chief god, but as usual they principally regard inferior spirits. These are supposed to reside on the tops of certain hills, or in rocky dells, and in groves on the high land, to which they are believed to descend at night. Temples and idols they have none, except in certain villages of Jaintia, where Kāli and her Brahmins have unfortunately effected a lodgment,

probably under the patronage of the Ex-Raja, whose devotion to the bloody goddess cost him his kingdom.

The people are much addicted to consulting auspices of different kinds, but especially by the breaking of eggs. Indeed this latter superstition is so prominent, and has got such a fast hold of the people's minds, that it would seem to be the principal part of their religious practice. On all occasions of doubt it is resorted to, and they will spend whole days in dashing eggs upon a board, with much wild chaunting and wilder gestures, in search of a decisive or a favourable augury. They also constantly sacrifice goats, pigs and oxen to propitiate the spirits. A Kasia from a distant western village, at whose house I had once been a guest, having come on business to Cherra and paid me a visit, he was regaled with a glass of brandy; before drinking it, he dipped his finger four times in the glass, flinging a drop successively over each shoulder, and down by his right and left side; on being asked his meaning, he said it was "for the name of God."

A very curious superstition regards the boa, or some other large snake. It is believed, that, if he takes up his abode with any man, great wealth will accrue to the household; and that there are evil minded men who go about in search of whom they may slay, and cutting off the nose, lips, ears and hair of their victims, with these propitiate the serpent, and prevail on him to be their guest. And it is difficult to persuade a Kasia to go into the jungle alone, generally for fear of meeting with one of those villains, who are supposed to hide in all solitary spots looking out for prey. The way in which the serpent is believed to bring wealth to his votary, is after the manner of the prophet's blessing on the widow. Whatever he may sell from "basket or store, kail or potatoes," his stock diminishes not. One would hope to find his ill-gotten treasure turning to "slate stones," as wizard's gold was wont, but we hear nothing of this.

Their astronomical notions are the rudest of the rude. The changes of the moon are thus accounted for. The moon (who is male, and the sun female, as they were in England in Saxon times) every month falls in love with his wife's mother, and she repelling his addresses, throws ashes in his face. For the stars generally, in days of old there was a great tree; up this climbed a great multitude, and when they were fairly among the branches, another multitude came and hewed the tree.

Wherefore (said the narrator) all the multitude remained above, where they form a great bazar, and are the stars we see. The group of the Pleiads is the only one they name, and it is called "the Henman." Is it not called "the chickens" in Italy? They have names for twelve months, as follows, but their application seems somewhat vague.

Naiwien,	Ujiliú,
Ukla-lankót,	U-naitung,
Urampáng,	U-nailar,
Ulabér,	U-nailúr,
Uyaiyóng,	U-risau,
Ujamáng,	Nauprá,

Smaller intervals are reckoned by village market days, which are held every fourth day, a greater and a less alternately. They have no weeks.

Some of the local traditions are interesting. The following is a parallel to the banquet of Atreus. One of the finest water falls near Cherra, in the deep valley of Maumlū, is called Kano Likai, or Likai's leap. The origin of the name was thus related to me. Once on a time a man of foreign race came to the hills, married a woman named Likai, and settled with his wife in a village north of Maumlū. They had two children, a boy and a girl. One day the woman betook herself to the forest as usual to cut fire-wood, in her absence the father killed his two little children, and cooked them; on his wife's return, he invited her to feast on what he had prepared, and she did so; he then disclosed what she had eaten. Then said Likai, "It is no longer good to remain in this world," and hurrying to the adjoining precipice leapt over.

Another rock in the same neighbourhood, has its name from a crime which occurred during a severe famine. Two brothers sat upon its verge conversing. One had just procured a supply of rice, the other was destitute. The latter thought within himself, "here is abundant food, my wife and children are perishing for want," and pushing his brother from his seat, seized his plunder, and hurried home.

On the road from Cherra to Jaintia is a singular ravine, some 600 yards in length, and 80 feet in depth, with sides remarkably even, and regularly parallel. The far end is closed by a round knoll. This, it is said, was the archery ground of three heroes of old, Ramha, Nonorrop,

and Pangnorrop. I asked if there were giants then in old times? The good man answered, that he could not speak as to their height, but they were "Bara mota wala," exceeding stout.

The Kasias have also their maid of Arc, or black Agnes. She was the wife of Ula. Ula was a great warrior at the court of the Raja of Linkardiyem, and the Raja married his sister.

Now in those days there were but twelve households in Cherra, and the Raja of Linkardiyem, making war on the Raja of Cherra, drove him with his people to the woods, where they eat leather, and the rind of certain fruits. But the Raja of Linkardiyem was a savage, and abused his wife, the sister of the brave Ula. For he placed her on a frame of bamboos, and lighted a fire beneath; and so, being roasted, she died. So Ula was wroth, and he went to the Raja of Cherra, and said, "Make me a great man, and I will avenge thee on thine enemy." So he of Cherra agreed; and Ula having cut off the head of the Raja of Linkardiyem, brought it to him of Cherra, and so became first counsellor of the Raja. One day as Ula was going forth on his avocations, with others of the village, he said to his wife "Clothe thyself with my arms, and garments." Meantime the new Rajah of Linkardiyem came against Cherra with a mighty host of four thousand men. Now the village of Cherra was well girt with palisades and ditches, and the wife of Ula went forth to the barriers in her husband's arms and clothing, and the other women doing likewise went with her, and when the army of Linkardiyem beheld the arms and the shield, they shouted in terror 'Ula! Ula!' and turned their backs in flight; for great was their fear of Ula. And the wives of Cherra, and the men who remained, went forth with the wife of Ula, and chased the Linkardiyemians, and smote them sorely.

From these twelve households come the twelve tribes which now exist in Cherra. My informant was of the house of Ula. I tell these tales as they were told.

About forty miles west of Cherra, not far from Laour in the Silhet district, a river debouches from the mountains, marked in Capt. Fisher's map as the Jadukotta river. It is a wide shallow stream in the plains, but from where you enter the hills in ascending, it is naturally dammed back so as to present for nearly ten miles a splendid river of the first class, with still, deep, and clear waters. Under one of the bold preci-

pices which spring right from the water, to a height of many hundred feet, is a curiously arched cavity strongly resembling an upturned boat, and which the people name Basbanya's ship. Who Basbanya might have been, I could not learn, except that he was one of the "Deota Log." Resting under this vault, we witnessed the mode of fishing in the river. About thirty skiffs forming a circle dropped their large net, and each holding a cord from it, diverged in all directions. When they had reached the end of their tether, they again began to converge, smiting the water with their oars, beating with sticks on the gunnels, and howling like a hundred jackalls. Gradually they came on, making the hills ring, and hauling on their lines till they were formed round the net again. Then the result began to appear; as the net gradually contracted, the whole circle became alive with fish, and at least one boat was heavily laden with the spoil. The river must be inexhaustible in its supplies, for this operation is repeated many times a day by several similar companies, besides smaller parties. Passing on, we reached about 6 or 7 miles above the plains, the largest boulder I have ever seen, standing into, and overhanging the water. It bears the name of Raoul, and at a height of ten or twelve feet above the water level is an old and worn Persian inscription in large letters. I was then unacquainted with the Persian character, and the copy taken was rough and probably incorrect, for none of my acquaintance could decypher more than a word or two. It was lent to one of them for the purpose, and has never been returned. Perchance it was the record of some Mussulman adventurer, during the early days of their Indian history, seeking an El Dorado in these wildernesses.

On a little sandy beach where a tributary joined the main stream, were a few huts, the scene of a bustling bazar of exchange between the Bengallees and the Hill people. In the river's course above this all was impenetrable and uninhabited thicket. Far beyond, said the Kasias, dwell a strange race, who eat men and snakes:—an obscure rumour, probably of the Garrows, whose territory could not be far distant.

KURNAUL,

September 4th, 1844.

Notice of the Ajaib-al-Mukhlukat. عجائب المخلوقات By Captain
NEWBOLD, F. R. S.

The following sketch of Cazvini's "Wonders of the Creation," consists of a number of notes thrown together for private reference, while looking over a MS. copy, in Persian and Arabic, of this curious compilation (illustrated with pictures,) in possession of the son of the late Nawab of Kurnool.

Being engaged in some researches with the mineral resources of S. India, my principal object was information as to sites, (hitherto unknown to Europeans,) of ores, gems or valuable minerals in India, and any thing that might afford the means of judging of the amount of produce anciently yielded by those extensive excavations, in its diamond, copper and lead districts, which are seen at the present day entirely neglected, and half choked by vegetation and rubbish.

Little, it must be confessed, on this head has been elicited from diving into the pages of the *Ajaib-al-Mukhlukat*. It mentions mines of *tutiya*, توتيا blue vitriol, on the coast of Hindustan; but the precise site is not specified: I am not aware of the existence of any such mines at the present day in India. It is exported from Pegu, and used by Hindus as an escharotic loadstone, *al-maknâtis*, المقناطيس colour red, with black lines, he states to be brought from India. It has the property, he adds, of attracting iron, hence vessels that sail to the land of the loadstone, are built without iron nails.

I have found large masses of magnetic iron ore with polarity in the neighbourhood of Hospeti, Kittovo, and the Baba Booden mountains, with dark red and black stripes, as described; and have little doubt that it exists largely in the highly ferriferous granites and hypogene rocks of S. India. The idea of the rocks on the coast of India attracting vessels by magnetic forces, may have arisen from the observation of the effects of the powerful surf in washing vessels ashore; and that of the vessels without nails, from the Massula boats, which are constructed of planks sewn together with coir. Diamonds, lead, copper, and iron are not mentioned as exports from India. The best sword blades are stated to be brought thence.

Diamonds are said, as well as rubies, to be found at the foot of *Gebel Serendib*, in Ceylon.

That Ceylon produces rubies is a well known fact, but I am not aware that the diamond has ever been found there, or that there is any geological formation on the island equivalent to the diamond conglomerate of India, or the Cascalhao of Brazil. If obtained from Ceylon in the time of Cazvini, it was probably imported from India by the Singhalese from gem merchants.

Among other productions of India are enumerated the bezoar stone, (*padzahr*, پادزهر or expeller of poison,) from the stomachs of sheep. Eagle stones, (*haja-al-akab* حجر العقاب found in eagle's nests. The author states them to be like tamarinds, and to give a sound when shaken ; but when broken, are found empty. The eagles bring them from India.

The astronomical part of the work is evidently compiled from the Arabian authors, whose systems were founded on those of Hipparchus and Ptolemy ; and the compiler has fallen into the error of the latter in stating the precession of the equinoxes to be as 1° per century, instead of following the Arab prince Allategnius, who brought it as near the truth as 1° per 66 years.

His natural history is chiefly derived from the works of Aristotle, Dioscorides, Sheikh ur Reio ; and his geography from Ptolemy and Abur Rihan.

In these departments more especially, the author has gravely enumerated many travellers' tales and incredible absurdities ; but we should be sorry to reject the whole on account of defects, from which even the works of the great father of history, Herodotus himself, are by no means free.

The experience of after-times often demonstrates the truth of statements entirely disbelieved, and ridiculed on their first promulgation. Witness those of the slandered and magnanimous Bruce. Even in the most marvellous traditions of the various races of the earth, we frequently find clues to valuable truths.

The wonderful tales of griffins, hippogriffs, dragons, and other monsters of old, probably originated in ancient traditions of strange animals now extinct, the fossilized dishonored skeletons of which, in the present day, convince us of the fact, which we should have otherwise ridiculed ; namely, that the world once swarmed with such monsters.

One of the last descriptions in the *Ajaib-al-Mukhlukat*, is, that of a strange creature seen on the coast of Arabia Felix, (Yemen,) the legs and lower parts of which were those of a woman, but separating from the hip into two distinct human bodies, with two heads and two pair of arms. These two bodies lived, ate, and drank amicably together, but sometimes they quarrelled. After a space, one of the bodies died, and the traveller who relates the story, states, he was informed that after the lifeless trunk had been cut off, the other trunk survived and went its way.

The sequel of this story is a little marvellous; and the whole tale would have been thought excessively Munchausenish by any person who had not seen or read authenticated accounts of the Siamese twins.

The mermaid I have little doubt has its origin in the exaggerated accounts of the form and habits of that singular inhabitant of the Malayan seas, the Dugong; Gog and Magog, and a host of other strange beings described by Cazvini, had their origin in the exaggerated accounts of travellers. Anticipating some scepticism on the part of his readers, Cazvini gravely premonishes them that all things are possible to God.

In describing the wonders of the creation, like the writers of the Bridgewater Treatises, he piously calls attention to the wisdom and beneficence of God in the displayed harmonious design of his works; and labours to impress on his readers, that the heavens and their starry host; the earth and encompassing ocean; and all that therein is, men, angels, genii and animals, were created by God for the manifestation of his glory and greatness.

The work was evidently intended as a popular exposition of the sciences and natural history, rather than as a class book for students in the many branches on which it touches.

The geological theories of mutual and periodical changes of sea and land; the poles; the successive destruction and reproduction of different races of animals; the entombment of organic remains; the degradation of mountains by watery action; the transport of their debris into the ocean again to become mountains when its bed becomes dry land; the origin of tides; springs; earthquakes; halos, &c. are curious and worthy of perusal.

Cazvini wrote in the 13th century. His work is divided into two *mukáleh*s, or discourses. The first treats of sublime or heavenly things, (*Alwíat* علویات), and contains thirteen *nazrs*, sub-divided into chapters. The first eight *nazrs* describe the arrangement of the heavens, the sun, moon, their eclipses, &c.; the planets, their movements and periods of revolution; their retrograding and becoming stationary.

The ninth *nazr* comprises an account of the fixed stars, constellations, &c. The tenth *nazr* treats of the zodiacal signs; and the eleventh of the empyrean heavens, the *primum mobile*—*Falek-i-Aflak* فلک افلاک. In the twelfth *nazr*, we find a description of the lunar mansions; the north and south poles; the zodiacal signs; angels; genii and devils, &c.; and in the thirteenth, one of the divisions of time among different nations; the four seasons, &c.

The second *mukáleh* treats of lower, or sublunary things, (*Sifflídt*, سفلیات) and is divided into five *nazrs*, subdivided into chapters.

They treat of the elements; falling stars; air; clouds; rain; the winds; halos, (*halah*, هاله) thunder and lightning; water comprising the ocean; its ebb and flow; the seven seas; the earth and its divisions; earthquakes; mountains; plains; streams; springs and wells; things compounded of the elements such as minerals; meteoric stones, vegetables, animals, man, angels, genii, ghouls, devils, beasts, birds, and reptiles; concluding with an account of strange animals.

Summary of the First Mukáleh.

I shall now proceed to a summary of the contents of the 1st *mukáleh*, scattering a few remarks here and there, as they occurred to me during perusal.

The universe is considered to be an assemblage of spheres or orbits, (*Aflak*, افلاک) concentrically arranged "like the coats of an onion," (*Hamchun Kasher-i-piyaz* همچون قشیرپیاز), and similarly contiguous.

The author gives an illustrative diagram of the mundane system, of which the subjoined is an exact copy. The concentric red lines are to represent the orbits in which the sun, planets and fixed stars are supposed to revolve round the earth.

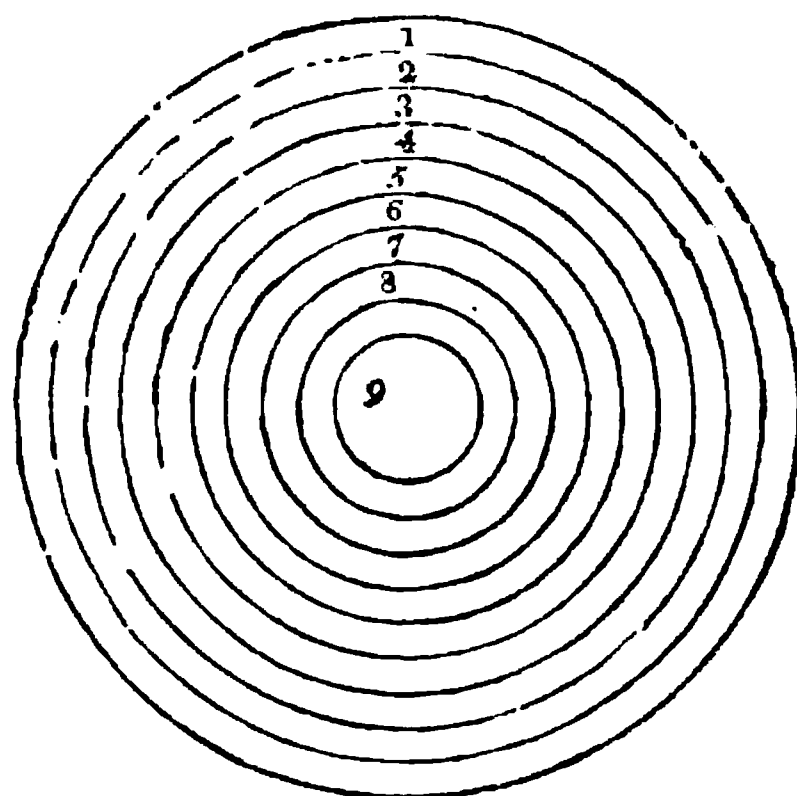
The Empyrean Heavens.

1 Zodiac.

2 Saturn.

3 Jupiter.

4 Mars.



5 The Sun.

6 Venus.

7 Mercury.

8 The Moon.

9 The Earth.

The earth is supposed to constitute the motionless nucleus, (the *centrum mundi* of the Aristotelians,) around which the sun, moon, and planets revolve in the following order of proximity :—

The Moon,	..	..	..	القمر Al-kamr.
Mercury,	..	..	..	عطارد Uttarid.
Venus, ..	..	..	..	زهرة Tohrah.
The Sun,	..	..	..	شمس Shems.
Mars, ..	..	..	..	مرئخ Marrikh.
Jupiter, ..	..	..	..	مشتري Mushtari.
Saturn,	..	..	..	زحل Tuhah.

Inclusive of all is the orbit of orbits, the *Falek-i-Aflak*, in which the fixed stars are set as jewels in a ring, and revolve eternally with it from East to West.*

The author, after slightly noticing the proper motions of the planets, or “wandering stars” and fixed stars, proceeds to give a description of the moon, and of its diurnal and monthly revolutions round the earth.

* This is the theory of Aratus, Hipparchus, and after them of Ptolemy; it conveys the impression of a belief in the solidity of the spheres.

He represents the moon as being the least of all the luminaries of heaven, and its orbit as being nearest to the earth; its substance, naturally dark, receiving light from the sun, (an opinion, according to Plato, anterior to Anaxagoras 500 years before Christ,) in regularly varying phases, according to its distance or proximity. From performing its revolution from West to East round the sun in a shorter time than any other planet, it has been called the *Paik-i-falek*, پیک فلك the courier of the sphere, who performs his course in 28 days' journies, or *manziles*, منزل. On the 29th the moon is veiled (*mustater*, مستتر) being below the sun's light, or in conjunction: this sometimes occurs on the 28th, when the month is said to be *nakis*, ناقص deficient. From this time it begins to increase its distance from the sun, and daily to receive more of its light. When it arrives in opposition, the whole of the moon's face nearest the earth becomes illumined, and is termed *badr*, بدر in contradistinction to *halal*, هلال new moon. As it approaches the sun, it receives less of its light. At the conjunction (*mukáran*, مقارن) of the sun and moon, the dark side is turned towards the earth, and the light side towards Mercury.

Eclipses of the Moon.

The author explains these phenomena by the supposition of the earth's coming between the sun and the full moon, when near its ascending or descending node; when the earth's shadow is consequently thrown on the moon.

Moon's influence on Tides.

The bi-diurnal ebb and flow of the ocean are ascribed to the moon's revolution round the earth. The flow is at its maximum when the moon arrives opposite the axis of the earth, (i. e. when it comes upon the meridian,) and begins to ebb immediately it has passed this point. The ebb is at its maximum when the moon is in the horizon.

The bi-monthly rises and falls of the ocean (spring and neap tides,) are said to be owing to the conjunctions and opposition of the sun and moon.

Moon's influence on Animals and Vegetation.

During the moon's increase, animals are supposed to be stronger; the temperament of man, the secretion of juices more active; beasts more eager in pursuit of prey; fishes in better condition; growth of vegetation

quicker, and the production of fruit in greater abundance and of superior flavour and colour; gems are generated, grow, and acquire brilliance during the days of the moon's increase. A person who falls sick during the increase, will have greater strength to resist the progress of his disorder than during the wane of the moon.

When much exposed to its rays he then becomes sleepy and indolent, and subject to colds, vertigos, &c. The flesh of animals falls into rapid decomposition.

The Milky-way, Surj-al-Asma, سراج الاسماء the Saddle of the Heavens.

The milky way is called by some, the Mother of Stars, from the countless myriads it contains.*

Here follows a brief description of the computed size and revolutions of the planets, sun, and solar eclipses.

Fixed Stars.

The fixed stars, the author states, are innumerable; 1022 have been described, (the number given by Ptolemy, besides the stars *Adeneba*, *Algardi*, and *Almuren*, though Hipparchus gives a catalogue of 1081,) 970 of this number are grouped into 48 figures or constellations, 20 of which are in the Northern hemisphere; 16 in the Southern; and 12 in the Zodiac. (In the *Gatasterismi* of Eratosthenes, 250 years B. C. are the names of 44 constellations.)

The fixed stars move from W. to E., advancing about one degree per century, and performing their revolution like the sun, in 36,000 years. The axis of their orbit is similar to that of the Zodiac. The Zodiac is divided into 12 signs, (the names of which, like those of the Hindoos, correspond with those of the Greeks,) viz.

الحمل	Al Hamal,	..	Κριος
الثور	Ath Thour,	..	Τλυρος
الثوامين	At Tawámin,	..	Διδυμος
الثرطان	As Sartan,	..	Καρκινος
الاسد	Al Assad,	..	Λεων

* Democritus was the first to propound what the telescope of Galileo has proved; viz. that the galaxy was a congeries of minute stars. Up to his time it was thought by some that this singular track on the heavens was a forsaken path of the sun, a fiery exhalation or zone, the earth's shadow, &c.

اغدرا	Azra,	Παρθενος
الميزان	Al Mizan, ..	Ζυγος
العقرب	Al Akrab, ..	Σκορπιος
ذوالقوس	Zu-al-kous, ..	Τοξοτης
الجدي	Al Zadi,	Αιγοκερας
مساكب الما	Musakib-al-ma, ..	Υδροχοος
المكين	Al Makin, ..	Ιχθυς

The sun is supposed to traverse the 12 signs of the Zodiac in 365 days.

After the description of the constellations and their principal stars, follows a notice of the *Falek-i-Buruj* and the *Falek-al-Aflak*.

Angels, Geniis and Devils.

The author supposes angels to be beings endowed with life, reason and wisdom ; geniis free from darkness, lusts, sin, and impurity, among whom exists not the distinction of sex, beings created from fire expressly for the praise and glorification of the Almighty ; of various forms and power, whose sole delight is in divine adoration ; and whom God made to tenant the skies, in order that his power and goodness might be everywhere manifest ; in the heavens as well as on earth, in the regions of air, and among the depths of the sea.

Genii and devils are supposed to be allied to the angels, but imperfect, (vide p. 665.)

Of the angels that minister to the Almighty, four are constantly employed in interceding for mankind and created beings : the first has the form of a man ; the second that of a bull ; the third, that of a lion ; and the fourth that of an eagle.

Another angel presides over the motions of the spheres and stars ; the elements ; the animal, vegetable, and mineral world ; and over all things below the moon's orbit. His strength, excellence, and size are incomparable, and he possesses power to arrest and stop the revolution of the universe.

Among the principal angels, the author enumerates 1st, *Israfil*, who will sound the trump at the great day of resurrection, and whose wings reach from East to West, from heaven to earth. 2nd, *Gabriel*, the

spirit of the faithful the holy spirit, روح القدس who has charge of all created things. 3rd, *Michael*, who has charge of heavenly bodies, the actions and powers of things that have breath, and the angel-tenanted sea of the 7th paradise. 4th, *Izrail*, the angel of death, the place of repose of action; the place of immersion of souls and bodies, whose feet are on earth, and whose head touches the firmament.

The author, after narrating conversations between the prophets Abraham and Solomon with the angel of death, proceeds to describe the seven angels that have separate charge of the angels, the seventh heavens, the guardian angels, two of whom are constantly on the right and left of every mortal, to record his good and evil actions,* the two angels *Harut* and *Marut*, imprisoned till the day of judgment by the Almighty in a well in Babylon, for having, when subjected under a fleshly form to similar temptations, committed sins for which the angels denounced mankind.

Division of Time.

The measurement of time hinges upon the revolution of the heavenly bodies. Time is divided into *karans*, قرن or cycles; *karans* into years; years into months; months into days and nights; days and nights into hours; hours into minutes; and minutes into seconds.

Human life is made up of time; a space to be passed by each traveller; of which every year is a journey; every month a *bárid*; every week a *parasang*; every day a mile.

The day is shortest when the sun enters in *Jadi*, (Capricorn), and longest when it appears in *Sartan*. (Cancer). When the sun enters *Hamal* and *Mizan*, (Aries and Libra,) at the time of the vernal and autumnal equinoxes, the days and nights are equal.

The day is the space between sunrise and sunset; and the night between sunset and sunrise.

* "We created man, and we know what his soul whispereth within him: and we are nearer unto him than his jugular vein. When the two angels deputed to take account of a man's behaviour, take account thereof; one sitting on the right hand, and the other on the left, he uttereth not a word; but there is with him a watcher ready to note it. And the agony of death, shall come in truth. Thus oh man is what thou soughtest to avoid. And the trumpet shall sound: this will be the day which hath been threatened, and every soul shall come."—*Sale's Koran*, p. 382.

The Week.

The month is divided into four portions, consisting each of seven days.

Sunday, (*Yum-al-ahadi*, يوم الاحدي) is the first day of the week. It is kept holy by the Nazarenes. Jesus, blessings upon Him, first commanded his followers to keep holy the Friday; but the latter being unwilling that their holyday should precede that of the Jews; viz Saturday, Sunday was fixed on.

The second day is Monday, *Yum-al-ithnin*, يوم الاثنين the day of the flight to Medina.

The third, Tuesday, *Yum-ath-thaltha*, يوم الثلاثاء is the day on which Cain murdered Abel.

The fourth, Wednesday, *Yum-al-arba*, يوم الاربع

The fifth, Thursday, *Yum-al-khamis*, يوم الخميس

Friday, the Mahomedan sabbath, the day of assembly, يوم الجمع *Yum-al-juma*, the author has placed first in his list, though it is evident Sunday was originally, among the Arabs, the first day in the week, and Saturday, (*As-sabt*, السبت the seventh, or sabbath of the Jews), the last.*

Dion Cassius states, that the Egyptians consecrated the seven days of the week to the seven planets, Εἰς, τοὺς ἀστέρας τοὺς ἑπτὰ τοὺς πλανήτας ὠνομασμένους τὰς ἡμέρας ανακεσθαι κατεστη ὑπὸ αἰγυπτίων, and it is certain, that a hebdomadary division of the month prevailed at a period of the most remote antiquity among the nations of the earth, the days of which he distinguished by the names of the sun, moon, and planets. Among the Chaldeans, the Egyptians, the Arabians, prior to Mahomed, the Hindoos, the Greeks, and the ancient nations of Northern Europe. These hebdomadary period all com-

* It may be remarked, that the author assigns no reason for the division of the month into weeks. A division of time, not dependent on any movement or epoch of the heavenly bodies, but evidently of divine origin, the earliest and most authentic account of which is found in the books of Genesis and Exodus, wherein Moses declares that the creation of the world was accomplished in 6 days, and that the Almighty rested on the 7th day, and blessed it, and commanded that it should be kept holy as a day of rest by mankind; a circumstance to which the Mahomedan author briefly adverts, without explaining why Mussulman do not adhere to this precept of the Pentateuch.

mence with the day of the sun; and the order of succession of the names is precisely similar; a coincidence, striking and remarkable.

The natural binary division of the month into the light and dark periods, or rather of the moon's wane and increase of 15 days each, the *kista* and *sukla pukshams* of the Hindoos, is not mentioned by the author.

I have asked many Brahmans versed in astronomy, and well acquainted with the principles on which their sages have founded their divisions of time, why the week alone should not have been based on the movements or conjunctions of any of the celestial bodies. They have been generally, what is nautically termed, taken aback at the question, but said, their attention had not been called to it before. After consulting their books, they acknowledged that the week coincides with no revolution or conjunction of the stars or planets, and that it is of divine origin, instituted by the Supreme Being in everlasting commemoration of the days on which he successively created the sun, moon and five planets.

This may be regarded as an indication that Sabianism, from the Arabic *As-Saba*, السبع the seven, prevailed among the Hindoos prior to the introduction of Brahmanism and Buddhism.

Months.

After briefly noticing the months of the Turks, Copts, Zenjs and Hindoos, the author details those of the Arabs, Rumis and Persians.

Those of the Arabs consist of 30 and 29 days alternately, and their year of 12 lunations, or 354 days.

Arab Months.

Names.	Days.	Names.	Days.
		Brought over, ..	177
Mohurrum,	30	Rajab,	30
Suffer,	29	Sraban,	29
Rubai-al-awal,	30	Ramzan,	30
Rubai-us-sani,	29	Shawal,	29
Jamadi-al-awal,	30	Za'l-kadr,	30
Jamádi-us-sani,	29	Zu'l-hadj,	29
Carried over, 177		Total, .. 354	

Rumi Months.*

		Days.			Brought over,	Days. 182
Tarin	I.	.. 31	Nisan,	.. ..		30
	II.	.. 30	Ayar,	.. ..		31
Kanun,	I.	.. 31	Hanzan,	.. ..		30
	II.	.. 31	Pamuz,	.. ..		31
Sevat,	..	.. 28	Ab,	.. ..		31
Azar,	..	.. 31	Elul,	.. ..		30
Carried over, 182						Total, .. 365

Persian Months.

The Persian months consist of 30 days each, giving to the year 360 days ; but 5 days are annually added to the month *Aban*, which nearly completes the solar year. The month of Fernurdin commences the Persian year about the time of the autumnal equinox.

Names and order of the Persian months :—

1. Fernurdin.

2. Ardibihist.

3. Khurdad.

4. Tir.

5. Murdad.

6. Shahryur.
7. Mahar.

8. Aban.

9. Azur.

10. Di.

11. Bahman.

12. Isfandarmas.

Besides the division of the month into weeks, like other Mahomedan countries, the Persians have a separate name for each of the 30 days composing the month.

The author enters into a description of the months and of remarkable feast days among the Mahomedans and Persians.

* The names of the Rumi months are identical with those of the Syrians, who as well as the Greeks, adopted the era of Seleucus Nicator, dating 311 years and four months before Christ. The Syrian Greeks began their year in the month Elul, or September, and other Syrians in Pishrin 1, or October: the Jews about the autumnal equinox. The Hindee solar months commence in September with Aswini.

The four Seasons.

The period of the vernal and autumnal equinoxes, and those of the sun's entrance into *hamal* and *sartan*, (Aries and Cancer,) divide the year into four parts.

The first called (*rubbi*, ربيع) or spring, extends from the vernal equinox until the sun has completed its northerly course, and is on the point of returning towards the equator. The summer, (*saiif*, صيف) commences at this period, and lasts till the autumnal equinox, when autumn begins, and continues till the sun has attained its utmost southerly declination. The winter, (*shita*, شتاء) now sets in, and terminates at the vernal equinox.

The Cycles of the Prophets.

Some *ulimas* have declared, that God, once in a thousand years, in order to manifest his divine power and glory, has sent a prophet among mankind.

In the first 1000 years appeared *Abu'l-basher*, (the father of mankind,) Adam. In the 2nd, *Abuna-noh*, Noah, the Shaikh of the prophets; and Abraham, the beloved of God, *Khalil Allah*, in the third. In the 4th millennium appeared Moses, who spoke with God, *Kalm Allah*. In the 5th, Solomon, the son of David. In the 6th *Isa*, Jesus, the Spirit of God, *Ruh Allah*; and in the 7th, Mahomed, the Seal, or last of the prophets.

To this succeeds a curious story of the prophet Khizra appearing to a king, and telling him of the changes the world had undergone. That the sea was formerly dry land, and dry land sea, and that races of strange animals, no longer existing, have been swept from the earth's surface in succession.

2d Mukáleh, or Discourse on Sublunary Things.

Al Makalieh ath thanieh fias sifiat, المقالة الثانية في الصفات
The elements, *Al anásir*, العناصر

The elements are supposed to be four in number; viz. fire, air, water and earth, (then thought to be simple bodies,) of which every thing else is composed.

Fire.

The nature of fire is heat : its proper place in the creation is below the moon's orbit, above the region of air : fire being the lightest of the elements.

Air and Water.

Air being lighter than water, and heavier than fire, occupies the intermediate space.

Earth.

Earth being the heaviest of the elements, lies lowest near the lines of contact; each element is thought to partake of the character of the element to which it approaches. Fire is blended with the air as in the *simoom*. Air becomes water, as in rain. Water is converted into air, as in vapour ; and water into earth as in petrifying springs.

Phenomena of the region of Fire and Air, Meteors and Falling Stars.

Meteors and falling stars are considered as exhalations that have risen from the earth, and become ignited on reaching the region of fire ; as the smoke of a recently extinguished lamp is ignited, on reaching the flame of another lamp placed above it.*

Division of the Atmosphere.

The air is divided into three regions. The highest nearest the region of fire, is extremely hot, and is called ether, (*ather*,) اثير

The second is intensely cold : the third, which is nearest the earth, has a more moderate temperature, and is subdivided into warm, cold, and temperate.

Clouds and Rain, (Sahab-wa-al-matr, سحاب والمطر)

Clouds are supposed to be water raised in vapour by the sun's heat ; and rain and mist, the result of their condensation in the middle, or cold region of air.

* It is curious that the uses of oil gas should have remained so long latent, after this early discovery of its inflammable nature.

The Winds, (Ar Riah, الرياح)

The winds are produced by the sun, and the revolution of the spheres. The North wind is cold, because it comes from the North pole ; and the South wind is warm, because it passes over the equator.

Thunder and Lightning, (Arradwa-al-bark, الرعدوالبرق)

From the jagged and broken appearance of clouds in a thunder storm, it is thought that thunder and lightning are the result of the shock of the collision by which the clouds are thus broken in their rapid descent after condensation in the middle region of air.

The lightning is seen before the thunder is heard, although it is said that both are simultaneous. The reason of this is, that the sound of the thunder is dependent on the undulations of the air, (*mowkuf bar, tama-wuj, al-haw-a, موقوف برتموج الهوا*) which are slower than sight.

When a person is beating clothes on a stone at a distance, we see the cloth strike against the stone before we hear the noise.*

Halos, (Al-halah, الهاله hence our term halo,) are caused by the reflection of the moon's light on subtle polished particles floating in the air, and veiling the moon.†

Rainbows, (Kous, قوس)

Rainbows occur when transparent particles of water are in the air opposite the sun, the rays of which cause them.

Phenomena of the region of Water, (Karah-al-ma, كره الماء) Convexity of the surface of the Sea.

The surface of the ocean is assumed to be convex, because sailors affirm, that in approaching a mountain from the sea, the top of the

* Anaximander, more than five centuries before Christ, ascribed the phenomena of thunder and lightning to a similar cause ; and his pupil, Anaximenes we find, in an approach to the discovery of electricity, comparing lightning to the flash produced, in seas of warm latitudes, by the stroke of an oar.

† Halos have been lately considered as caused by the moon's light, or frozen shining particles floating in the air ; while others suppose them occasioned by that class of cloud called by meteorologists, *cirro-stratus*, which are formed in the lower strata of the atmosphere.

mountain is first descried, and drawing nearer its centre and base, come into view successively.

Saltness of the Sea.

Water is divided into two great classes ; viz. salt and fresh, the salt is derived from the earth burnt by the sun, and driven by the winds into the sea. Salt prevents the ocean from putrefaction, and creating a pestilence in the world, which the ocean surrounds.

Subdivisions of the Salt Water.

The salt water is divided into seven seas, comprehended in the surrounding ocean, *Bahr-i-Mohit* ; viz.

The sea of China,	..	Bahr i Chin,	..	بحر چین
„ Hind,	..	„ al Hind,	..	بحر الهند
„ Persia,	..	„ al Pars,	..	بحر الپارس
„ Kolzum, or Red Sea,	}	„ al Kolzum,	..	بحر القلزم
„ Zenj, or Zan- guebar,		„ al Zenj,	..	بحر الزنج
„ Mughrib, or Western sea,	}	„ al Mughrib,	..	بحر المغرب
		„ al Kharz,	..	بحر خرز

Seven other names are given to the seven seas ; viz.

1. Bahr-i,	..	..	<i>Kabis.</i>
2. „	..	..	<i>Hom.</i>
3. „	..	..	<i>Muzlin.</i>
4. „	..	..	<i>Mirjos.</i>
5. „	..	..	<i>Sakin.</i>
6. „	..	..	<i>Baki.</i>
7. „	..	..	<i>Nitash.</i>

The author having entered into a long description of the wonderful inhabitants and natural productions of these seas and their different islands, of which are given some curious paintings, proceeds to describe the form and divisions of the earth.

The Earth, (Kurah-al-arz, كره الارض)

The earth is supposed to be divided into three parts ; there is nothing lower than the earth. Some say, it is striped like a sphere ; others

like a shield or half a sphere. Most of the ancients are of opinion, that it is a ball placed in the midst of the heavens, like the yolk of an egg in the white. Some say the earth has nine sides : on each side men stand with their feet to the earth, and their heads towards the sky. Some say, it floats in the midst of the ocean.

Pythagoras (فیتاغورس) thinks the earth revolves, and that the apparent motion of the heavenly bodies, from East to West, is caused by the motion of the earth from West to East. But this can never be ; for if we liberate a pigeon in the air, it could never again return to us ; since the earth must revolve more rapidly than a pigeon can fly.*

The earth is divided into three parts ; viz. 1st, the part above the ocean ; 2nd, the part concealed by the ocean ; and 3rd, its centre or axis. The surface is covered by vegetation and animals ; the interior is occupied by ores, metals, &c. Only half of the heavens are visible at once : but, if we move our position, on the earth's surface, we see parts of the heavens which were not visible from the place which we first occupied, at the rate of one degree of the heaven's surface for every 19 *parasangs* we travel.†

After a quotation from Abu Bihan's speculations on the earth's diameter and circumference, the author alludes to the fact of the Caliph Mamun causing the measurement of a degree to be made, (this was done, A. D. 814, in the sandy plains of Mesopotamia, between Palmyra and the Euphrates,) by which $56\frac{2}{3}$ miles were fixed as the equivalent of a degree of the heaven's circumference.

Batolimus, (Ptolemy), he goes on to state, divided the night and day into 24 equal portions by the rising and setting of the sun. Having ascertained that the sun traverses 15° of its path in an hour of time, ($24 \times 15^{\circ} = 360^{\circ}$,) he found, by observations of an eclipse of the sun at two cities, (the distance between which was ascertained,) that a degree of the sun's path was equivalent to every 75 Arabian miles of the earth's surface, which being multiplied by 360 give 27,000 miles as the measure of the earth's circumference, (24,912 geographical miles are its true circumference.)

* This is the old objection of the Ptolemais to the Pythagorean or Copernican system ; they forgot that the atmosphere, in which their pigeon flies, partakes of the motion of the earth, and carries the pigeon along with it, at an equal rate with the objects on the earth's surface.

† Calculating the *parasang* at 3 miles, the terrestrial degree would be 57 miles.

The author observes, that when the sun rises on the Islands of Prosperity, (*Jaadit*) *معدت*, the *των μακάρων*, or Fortunate Islands of Plotemy, in the far west, he is rising on the inhabitants of China in the extreme East. Hence the distance, he states, must be one-half of the earth's circumference, or 13,500 miles.*

The Divisions of the Globe.

Abu-r-rihan of Kharezmi, divides the globe into the Northern and Southern hemispheres, which are separated by the equator.

Another line, crossing the equator at right angles, and extending from pole to pole, subdivides it into four quarters.

The Southern quarters are supposed to be occupied by water; and the equator to be the austral limit of the habitable world.

Of the Northern hemisphere $\frac{1}{4}$ th is land, and the remainder water. The tracts near the North pole are uninhabited from the intense cold which is occasioned by its distance from the equator.

Those parts are inhabited, where the maximum length of the days and nights never exceed 16 hours.

The South-easterly parts of the North hemisphere are inhabited by the Abyssinians, the Zenjs, (people of Zanguebar,) and the Nubians. The S. W. tracts are bad, God knows.

The seven Climes, (Haft Akalim, هفت اقالیم) the κλίματα of the Greeks.

The habitable portion of the earth, (*i. e.* Northern hemisphere,) is divided into seven climes, which are supposed to extend like zones, or carpets, spread from East to West, between the equator and the North pole. Their breadth from N. to S. varies, and their length shortens,

* Eratosthenes of Cyrene, who determined the distance between the tropics, $47^{\circ} 24' 39''$, or $\frac{11}{83}$ of the earth's circumference, was the first to attempt the earth's measurement by observations of the sun's meridian height. He found that, at the summer solstice, the sun was vertical at noon at Syene, while at Alexandria, at the same time, it was the 50th part of a circumference from being vertical; hence he concluded, neglecting the solar parallax, that the distance between these two cities comprehended a 50th part of the globe's circumference. The distance between Alexandria and Syene was then estimated at 5,000 stadia; which multiplied by 50, give 250,000 stadia as the measure of the circumference, and divided by 360, $694 \frac{4}{9}$ stadia to a degree.

This practical philosopher, who flourished nearly three centuries before Christ, wrote a work on geography, which is unfortunately lost.

conformably to the earth's form, as they approach the pole. The length of the 1st clime, that nearest the equator, is 3,000 *parasangs*, and its breadth 150; while the length of that nearest the pole is only 1,500, and its breadth, 75 *parasangs*.

Afridun, Alexander, Ardeshir, and other similar monarchs, have made these climes the boundaries of their empires.

The leading principles on which this division of the North hemisphere into climates is based, are the differences of temperature, and the maximum length of the days and nights. In the first clime, the maximum length is from $12\frac{1}{4}$ to $12\frac{1}{2}$ hours.

				<i>Hours.</i>		<i>Hours.</i>
In the 2nd Clime from	..	..	..	$13\frac{1}{4}$	to	$13\frac{1}{2}$
„ 3rd Ditto ditto,	..	..	..	$13\frac{3}{4}$	to	14
„ 4th Ditto ditto,	..	..	..	$14\frac{1}{4}$	to	$14\frac{1}{2}$
„ 5th Ditto ditto,	..	..	..	$14\frac{3}{4}$	to	15
„ 6th Ditto ditto,	..	..	..	$15\frac{1}{4}$	to	$15\frac{1}{2}$
„ 7th Ditto ditto,	..	..	..	$15\frac{3}{4}$	to	16

It extends to $16\frac{1}{2}$ hours, beyond which all is supposed to be desolate and uninhabitable.

Earthquakes, (Fiaz Zulazal, في الزلازل)

When vapour and steam are pent up in large volumes in the bowels of the earth, and are not condensed by cold into water, nor dissipated by heat; if the surface of the earth becomes heated, and they cannot find vent, they cause the earth to tremble like the body of one affected with fever, which shakes from the greenness of the corruption that is within.

In the human body, however, there is a natural heat which becomes inflamed, and dissipates or dissolves the noxious matter; but in the earth, this species of heat does not exist.

These vapours sometimes burst through the surface of the earth, or undermine it, which causes the engulfing of mountains and cities.*

* It has long been remarked, that among other signs of an approaching earthquake, volcanos in the vicinity ceased to smoke. Anaxagoras (500 years B. C.) supposed earthquakes to be caused by the pent-up air or vapour endeavouring to escape.

Formation of Mountains and Sand Dunes.

Mountains were originally formed of water and earth, hardened by the heat of the sun into rock, like clay into brick. The earth was drifted into heaps by the wind, and thus converted into stone.

Every 36,000 years the stars complete a revolution,* and a great change takes place on the face of the globe. The North becomes South, dry land becomes sea; and sea, dry land; mountains, plains; and plains, mountains.

Mountains crumble by the solar heat into dust and sand, which are carried by the winds into rivers, and by the rivers transported into the bed of the ocean, and in lapse of time become piled up into hills; in which, when the bed of the sea again becomes dry land, we see bones and shells.

The reason of some rocks being piled up in layers, is, that they have thus been deposited successively by water. Running water is continually transporting the earth of mountains and plains into lakes and seas, in which it is accumulated in heaps, which become mountains.

When left dry by the sea, their surface is first covered with grass, and shortly becomes inhabited by animals.

Sometimes the water of the sea rises, and covers what was formerly dry land.†

The use of Mountains, (Fi-fuaid-al-jebal, في فوايد الجبال)

Mountains were created as the foundations of the earth, that it should not be moved; they serve as barriers to the land against the sea, and as repositories of minerals. The streams and springs which run down

* On the theory of their advancing a degree East every century, they would complete a great circle of 360° from W. to E. in 360 centuries. Ptolemy makes the precession at 36" per annum. Hipparchus, according to Le Gentil, 50".

† Geologists of the present day have hardly advanced further in their theories of the formation of aqueous rocks, and the entombment of organic remains.

The Arabian author, however, cannot lay any fair claim to originality, as these ideas are as old as Pythagoras, or at least the edition of them given by Ovid. The theory of the periodical catastrophe in which the world is supposed to be involved had its rise, probably, with the Cosmogonists of Egypt, who believed that the world is successively destroyed and re-produced at the return of each great year, "when the sun, moon and planets are in the same sign of the Zodiac, from which they commenced their course." The length of the great year of the world, according to Orpheus, is 120,000 common years, according to Cassander 360,000, vide Note, page 20.

their sides, sustain animal and vegetable life ; their water is raised again by evaporation into clouds, which recondensing in rain and snow on the mountain tops, is collected in holes and caverns, and affords a constant supply ; such is the origin of springs. Springs collect into rivers, which terminate in the ocean after fertilising the tracts through which they flow, and conducing to the prosperity of cities.

Volcanos, (Gebel-an-nar, جبل النار)

There are some mountains which emit fire from their summit by night, and smoke by day, (the reflection, probably, of the fire in the crater on the smoke or vapour above, visible only at night,) such as *Gebel-Sikuliah*, جبل صقلية (the Sicilian mountain, Etna,) abounding in sulphur.

There are also mountains where a gentle breeze constantly blows, as *Gebel-Bamian*, and others where a strong wind prevails, as *Gebel-Diawend*, and the mountains of *Ghour*.

Remarkable Mountains.

Here follows an account in detail of some of the celebrated mountains of the world, in which are noticed *Gebel Dibawend*, supposed to be the highest mountain in the world, where Solomon imprisoned the genii ; and *Feridur*, the tyrant Zohak. A mine of red and yellow sulphur is said to occur on it. It is situated near Rai.*

On mount Ararat, (*Gebel-al-Jude*, جبل الجودي), the author states that a mosque built by Noah is still standing, and that a few of the planks of the ark were to be seen in the time of the accession of the Abbasides (about A. D. 749.)†

* The ancient Bhagæ in Persia. Modern travellers have estimated the height of *Dibawend* to be only 10,000 feet above the sea's level ; not so high as Etna.

† Berosus and Aldyenus both declare, there was such a report in their time handed down from the Chaldæans, and the relics of the ark, according to Epiphanius, were to be seen here in his time. Sale quaintly adds—"if we may believe him."

We are told that the emperor Heraclius went up from the town of Thamanin, and saw the place of the ark. There was also formerly a famous monastery, called the Monastery of the Ark upon some of these mountains, where the Nestorians used to celebrate a feast day on the spot where they supposed the ark rested ; but in the year of Christ 776, that monastery was destroyed by lightning, with the church and a numerous congregation in it. (Sale's Koran, p. 167, Note.) The height above the sea, of Ararat.

Adam's Peak in Ceylon, is represented as *Gobel-as-Serendib*, جبل السرنديب on the summit of which Adam alighted after his expulsion from paradise; and the prints of whose foot is said to be seen on the rock. Mines of red rubies and of diamonds occur on this mountain. These precious stones are washed down to the base by the rains and streams. *Serendib* is famous for its wood aloes: the women perform *suth*.*

Gebel-al-Kerman.—The mountains of Karamania the author states, produce a stone which when ignited, burns like firewood, (doubtless coal or mineral bitumen.)

Gebel-al-Maknatis, جبل المقناطيس The magnetic or loadstone mountain is supposed to be situate near the mountains of Kolzum, (Red Sea,) and is avoided by mariners, lest their ship be attracted by it, (hence the story in Sinbad the sailor).

Among volcanos or fire mountains, *Gebel-un-nar*, are enumerated those of Sicily and *Dibawend*; and one named *Kalsian*, in the neighbourhood of which no animal can exist, and birds even in flying over it perish.

according to the Russian traveller Parrob, is 2700 toises = 17,260 feet, more than 700 feet higher than *Dibawend*.

The Armenians call Ararat, Massissensar, or Mountain of the Ark, and it is still believed that the petrified remains of the ark exist on the summit. In a Church at Nova Schamachia, near the junction of the Aras with the Kur, a cross is exhibited, said to be made out of a plank of the ark, bestowed by an angel on an Armenian monk, who was struggling in vain to reach the top of the mountain. Ararat is stated to be of volcanic formation: pumice and lava are seen on its sides, and warm springs gush forth at its base, the existence therefore of the mines of sulphur, mentioned by Cazvini, is by no means improbable.

* The Mahomedans believe that when Adam and Eve were ejected from paradise, for eating of the forbidden fruit, Adam fell on Serendib; and Eve on the shores of the Red Sea at Judda. After the lapse of two centuries, Adam was conducted to his wife at Mount Ararat by the angel Gabriel, they subsequently returned to Ceylon, whence the human race was propagated. Adam is supposed to be of such gigantic stature, that while one foot rested on the mountain, the other was in the sea, and that the print is 70 cubits long. Knox, however, describes the print as being only about two feet long; and Moncony as two spans in length. The Buddhists of Ceylon, however, claim the print as that of the foot of Buddha left when he ascended to heaven. They call the mountain *Hemalel*: and the Portuguese have named it, *Pico de Adam*.

It is 7420 feet high, and composed of granite and gneiss. Rubies are still found around its base, though I am not aware, as before remarked, of the occurrence of the diamond in Ceylon. Garnet, the cinnamon stone, sapphire, cat's eye, and moon stone, are the only other gems of estimation which it produces. Iron, manganese and plumbago are its chief mineral products.

He also mentions a volcano in Andalusia, and a hill in the same country which emits inflammable air. Also the quicksilver and red and yellow sulphur mines, and *zunjafar* of *Al Baranis* in Andalusia.*

Origin of Streams, (Fi-tawallud-al-anhar, في تولد الانهار)

Streams originate in reservoirs formed in the caves and hollows of mountains by rain, and the snow which melt in the spring. Those that come from the tops of the hills continue to flow perennially : but those that are situated in the lower parts of the mountains are soon exhausted. Their length and direction are various : some have a course a thousand *parasangs* long ; all have their sources among mountains, and all terminate in the sea. Some of their water is raised in vapour by the sun, moved by the wind, and again deposited on the mountain in the form of rain and dew.

The author gives a brief account of some of the principal known rivers, and among them describes the Nile. The increase of this famous river in the hot season, when all other rivers were drying up, rendered it one of the world's wonders.

The author attempts to explain the phenomenon by the supposition of the winter rains which fall in Zanguebar, where the Nile he believes rises, being so far distant from the embouchure, that summer arrived before they could reach it. He calculates that the freshes are four months in passing through the desolate tracts of the South ; two months in Abyssinia and Nubia ; and one month in the regions where Islam prevails. He alludes to the absence of rain in Egypt ; the *Mekyas*, المقياس or Nilometer ; the human sacrifice at the cutting of the *Khaly* ; and the abolition of this abominable superstition by Amru and the Caliph Omar. He mentions among the productions of the river the crocodiles, and a species of fish that causes tremor to the person who seizes it.

The theory of the inundations of the Nile being caused by the pressure of the Mediterranean raised by the northerly winds, and forcing back the waters of the river on the lands in the interior ; and of the Nile

* Basalt occurs at Almagro, and the Sierra de Caldeirao presents volcanic products ; but I am not aware of the existence of any active volcanoes in Andalusia. In the Sierra Morena, are mines of quicksilver, gold, silver, lead and copper ; sulphur and vitriol are also found in some parts of Andalusia.

falling when this pressure is taken off by the commencement of the Southerly winds, is also alluded to.*

Among other rivers described by the author are the Euphrates, the Oxus, the Indus, the Ganges. The latter is said by the Hindus to flow from heaven: and when the great men of those regions die, their remains are burned and the ashes thrown into the river, which convey them to heaven.† Some of the water of the Ganges is conveyed daily to the temple of Somnath, which is 200 *parasangs* distant. (Calculating at the rate of three miles per *parasang*, Somnath is 600 miles distant from the Ganges.)

The next *fasl* treats of the origin of

Springs, (*Fi-tawallud-al-Ayun*, في تولد الغيون)

which the author divides into sweet, *azab*, اءذب; saline, (*maleh*, ملح); stinking, (*afan*, عفن); sulphureous, (*kilriti*, كبريتي); bituminous or naphthiferous, (*naphiti*, نفتي); and those producing borax, *borak*, بورك. These substances are supposed to be generated by heat. Among the celebrated springs, the author enumerates the sulphur springs of Bamian, the springs of Tiberias, &c. In the next *fasl* on wells, those of Zemzem in Arabia, (the well into which Joseph was cast.)

The succeeding chapters treat of the animal, vegetable and mineral kingdoms, all compounds of the four elements. The author divides them into two classes, *nami*, نامي and *ghair nami*, غير نامي; viz. bodies having

* Some believed that the inundations were caused by the northerly winds driving back the waters of the Nile themselves: others, that the clouds which traverse Egypt, wafted over its surface by the North winds, were collected, and descend in torrents down the steeps of Ethiopia into its channel.

The Nile, however, like all other rivers that rise near the equator, commences to increase in the most Southerly portions of its course before the summer solstice. Owing to the very slight inclination of its bed, in Egypt only two inches per mile, a considerable time elapses before the freshes from Abyssinia reach Lower Egypt, the velocity of the stream rarely exceeding three miles per hour. At Thebes, in Upper Egypt, on the 18th June 1840, I witnessed the first appearance of the great annual inundation in the Nile; viz. a slight milky turbidness of the water. This phenomenon is called by the Arabs *Nuktah*, نقطة which signifies a dot or a stain, but is also applied by the Egyptians to a dew, which is supposed to fall during the night of the 17th June, or the 11th of the Coptic month *Bauneh* or *Pyni*. The commencement of the rise of the Nile, though arbitrarily fixed by them to this day, is quite uncertain to a week or two.

† A little against the stream it must be confessed.

the power of growth ; and bodies not having the power of growth. Animals and vegetables form the first class, and minerals the latter. Vegetables again are distinguished from animals by wanting the powers of motion and sensation : but all three are linked together by wonderful and insensible gradations.

Minerals, (*Fi-al-Madaniat*, في المعدنيات,) are divided into three classes ; viz. ores or metals, stones and oily-minerals.

Minerals were created before vegetables and animals.

1st Class—Metals, (*Filizzan*, فلزان)

Metals are seven in number, viz. :—

1. *Gold*.—The particles of which are so close, that they cannot be separated by fire.

2. *Silver*.—Allied to gold, but checked in its progress by cold, and convertible into dust by fire.

3. *Copper*.—Allied to silver, but red, owing to the heat of its sulphur.

4. *Iron*.—Its blackness is owing to the heat of its sulphur. It is the most useful of metals.

5. *Tin*.—Rub tin with salt and oil till the latter is black. This prevents swords from rusting when rubbed on the blades.

6. *Lead*.—Its properties the ——— of gold, and breaking into fragments.

7. *Zinc*.—خارصيني *Khar-sini*, from China.

All the metals are supposed to be combinations of sulphur and quick-silver in different proportions, acted upon by a force or stimulus, called mineral heat, (*Hararat-i-madan*, حرارت معدن) electricity. The author treats of their medicinal virtues.

2d Class—Stones, (*Al-Ahjar*, الاحجار)

Transparent stones are supposed to be formed from rain drops, and opaque stones from water and earth, acted on by the sun and the *Hararat-i-madan*. Their colours depend on the matrix, or on the planets. Black is ascribed to Saturn ; green to Jupiter ; red to Mars ; yellow to the Sun ; blue to Venus ; variegated, Mercury ; white to the Moon.

In the succeeding descriptive list of gems and minerals, in which the author quotes the names of Aristotle, Galen, Dioscorides, and Shaik-ar-Reis, we find mention of antimony, which he states to be got principally from Ispahan. *Tutiya*, blue vitriol, mines of which are said to occur on the coast of Hindustan; lapis lazuli, cinnabar, *Hajar-as-sinabar*; the eagle stone, *Hajar-i Akub*, حجر عقاب, the moon stone, *Hajar-al-kamr*, حجر القمر. Pearls stated to be drops of vernal rain congealed in oyster shells. Red and white talc, *Talc*, طلق; mother of pearl, *Sadef* صدف; cornelian, *Akik*, عقيق, the best of which comes from Yemen; amber, عنبر; the bezoar stone, *Pad-zahor*, فاذنر, got in India from the bellies of goats and sheep. *Kartaria*, كرتاميا, a stone found in the lower part of high mountains which at night shines,* and has the appearance of fire.

The best turquoises, *Firozeh*, فيروزه, come from Korassan.†

The *Tághi-tus*, طاغي طوس, is described as a black stone with a smell of pitch, (probably coal or mineral bitumen.)

The diamond, *Almas*, الماس, is said to be the hardest of all things; but frangible if struck with lead, and the fragments are triangular. The diamond is found in the mountains of *Serendib*. In the valley (*Wadi*) of *Beid al Kamr*, بعيد القمر, pieces of flesh are thrown into the valley to which the diamonds adhere. The vultures pounce down on the pieces of flesh and bring it up.‡

The diamond is used by jewellers to bore other stones.

The loadstone, *Muknatis*, مقناطيس, is found in India; a red stone with black strips or lines, attracts iron. When a ship approaches the land of the loadstone, if it contains iron, it is attracted and cannot be separated.

* I was informed by Mr. Fischer, that from the magnesite excavations dug near the foot of the Salem mountains, emanates a phosphorical light which alarms the superstitious Hindus; but it is not certain whether the light proceeds from the exhalations or from the mineral.

† The turquois is a gem peculiar to Khorassan; the best mines are near Nishapur and Firozkeh. It occurs in veins in trap; its colour is owing to copper.

‡ The story of the vultures bringing up the diamond with the pieces of flesh, again reminds one of the Arabian Nights, as also the notice of the loadstone.

The ruby, *Yakut* ياقوت Rubies are of different colours; yellow, green and blue, (the sapphire?) but the best are red.

The ruby comes from the Southern cities near the equator. Its beauty is increased by exposure to fire.

3rd Class.—Oily Minerals, (Duhniat, دُهْنِيَات)

Quicksilver, sulphur, bitumen, naptha, &c. are presumed to be produced by the warmth of the earth's interior acting upon its juices. Ambergris is thrown up by the sea. Some say it is the production of a marine animal, or of a fountain in the sea; while others assert, that it falls in dew on rocks in the sea.

Mumiyai, موميائي is produced like mineral bitumen from the earth, in the land of Mosel and Persia. It is of a more precious nature than pitch, and used extensively in medicine in spasmodic affections, palpitations; and externally, mixed with other substances, for bruises and fractures.*

Plants, (An-nabat, النبات)

Here follows a description of plants, which are supposed to be between minerals and animals, and divisible into two great classes, viz. :—

1st. Those that possess high trunks, as trees.

2nd. Those which do not, as grasses.

Plants are supposed to be endowed with the powers of reproduction, increase, digestion, retention, attraction, &c.

The descriptions are short and unsatisfactory, containing a number of singular stories, many incredible, regarding the properties and medicinal virtues of plants; but among which may be easily discerned the glimmerings of a few useful truths. The Persian manuscript contains coloured drawings of many of the trees, which bear but a remote resemblance to nature. Among the trees are enumerated, ebony, oak, the camphor tree, sandal wood, the almond, the orange, the lime, the citron, the filbert, plaintain, cocoa, the palm, the date, the cypress, the balsam, the apple, the mulberry, peach, fig, pomegranate, olive and quince,

* The *Mum-i-Ayi*, the Soap of Ayi, is a black bituminous substance that oozes from a cavern in a hill called the *Kop-i-Mumiyai*, near the village of Ayi, not far from the route from Sheraz to Darabgerd. Formerly the door of the cave was guarded, and opened once a year, and the *Mum* that had collected during the year (in size not larger than an orange) taken out and deposited in the Shah's treasury. It is valued in Persia at a much higher rate than its weight in gold.

the sumach, sandarach, fir, jujube, pepper, vine, the clove, the cane, apricot, rose, jasmin, &c.

In the second class we find the cotton plant, squills, saffron, oldenlandia, sesame, colocintida, endive, spinage, turnips, cucumber, Egyptian and China beans, lentils, mustard, radish, onions, ginger, the violet, wild rose, southernwood, sweet basil, the tulip, lily, narcissus, &c. Like the minerals, the trees and shrubs are usually classed alphabetically.

Animals, (Al-Hywan, الحيوان)

Divided into seven classes; viz. man, genii, the horse, the ass, mule, camel; cows; sheep and deer, beasts of prey, birds, reptiles and insects.

The author states, that animals were created with limbs best adapted to their wants: among animals man ranks first; the author enters into a dissertation on the faculties of man, the prophets, saints, &c.; production and generation of man; his anatomical structure and physiology. He supposes the difference of colour among the human tribes to be occasioned by the sun; that the Arabs rank highest among the races of the earth's descendants of Ismail, whose residence is West of the second clime. The religion of the Arabs was originally that of Abraham.* They lapsed into idolatry; the worship of the stars, angels, &c. The chief of Arabs, Omar Bindahi, is said to have been the introducer of idolatry among these followers of Abraham, which he imported from the land of Balka, (Balkh?). The Arabs according to the author, were the most eloquent of the nations on earth.

The Persians.

The Persians are described as descendants of *Tamâras*, inhabiting Iran in the 3rd clime, and rank next to the Arabs.

They were idolaters and adored the stars (Sabians,) till the time of Gushtasp, son of Zohrab; when instructed by Zoroaster, the descendant of Manochehr Malek, they with their monarch, became worshippers of fire.

* Abraham is said to have been originally an idolater, like his father Azer, the idol-maker, and son-in-law of Nimrod; and worshipped the stars, moon, and planets; but who afterwards, according to the Koran, directed his face to Him who created the heavens and the earth, and overthrew idolatry.

Famous Men of Persia.

1st. Feridún the Just, the conqueror of the tyrant Zohak.*

2nd. Iskander (Alexander the Great,) son of Dara (Darius), son of Bahman, whose prime minister was Aristotle; the conqueror of Greece, Asia Minor, India and China. He died at the age of 32.

3rd. Noushirwan, son of Kobad, born in the time of the Prophet; unrivalled for justice.

4th. Bahram Gour, son of Yezdijird, renowned for skill in archery.

5th. Rustam Zal, who witched the world with noble horsemanship.

6th. Jamasp, the astronomer, who wrote a book on the conjunctions of the planets, foretold the advents of Jesus and the Prophet, and the decay of the religion of the Magi.

7th. Bazrchemher, son of Bakhtaghin, vizier of Noushirwan, the introducer of the game of chess from India.†

8th. Barid, celebrated as a musician in the service of Kusro Parviz.

9th. The sculptor of the statue of the horse Shabdez, so exquisitely carved, that it is said to be the work of the genii.

10th. Ferhad, the sculptor, who excavated the canal of *Kasr-i-Shirin*, قصر شیرین; the cave of Shirin. He is said to have drawn the likeness of his mistress Shirin on the palace walls with such incomparable art, that all who gazed on it became mad (enamoured.) Shirin (Irene,) was the beautiful wife of Kusro Parviz, and said by some to be a Christian.

* The name of the Assyrian tyrant Zohak, is still held in detestation in Persia, and the national banner was the apron of the blacksmith who slew him, till the Mahomedan conquest.

† It may be remarked that the author, with other Persian writers, ascribes the origin of this almost universal and princely game to India and not to China; the Arabian and Persian term for chess, *Shatrunj*, شطرنج is evidently a corruption of the Sanscrit

name of the game *Chatrang*, (चतुरंग). It is thought that the game was introduced into Europe, by the Crusaders, or by the Moors, who conquered Spain. The earliest practical work on chess is that of Lucena of Salamanca. His Treatise is named "Arte breve e introduccion muy necessaria para saber jugar al Axedres, conciento y cincuenta juegos de partido, Salamanca, 4to. about 1495.

The earliest mention, however, of chess occurs in a set of Latin verses, quoted by Hyde, and which is said to have been written in the time of the Saxons, and therefore long prior to the Crusades. Before 1200 A. D. Jacopo Daccisole, a Dominican Friar, wrote a Treatise on chess, called "Solatium scacchorum, scilicet libellus de moribus hominum et officis nobilium." Bazrchemher, who is said to have introduced chess from India into Persia, flourished in the 7th century after Christ.

Some believe the statue of Shabdez to have been the performance of *Perhad*.

The Rúmis,

Rúm is a name given by the Arabs to Greece and part of Turkey.

The *Rúmis* are descended from the progeny of Syaz, son of Ishak, (Isaac.) They dwell in the Western parts of the 5th and 6th climes, and are a sensual race, *Zohreh* (Venus) being dominant.

The Religion of the Rúmis.

Anciently, philosophy prevailed: their princes were then sages. Subsequently they adopted the tenets of the Nazarenes, (Christians.) There are three sects; the first, the Malekanis, call Jesus the Messiah, the son of God; the second aver that He is God Himself, the Holy Spirit, and the Messiah; while the third, the Yakúbis say, that he is of God. The author, after remarking on the customs of the *Rúmis*, proceeds to mention the Turkomans and Tatars.

The Turkomans and Tatars

are a fierce and choleric race, inhabiting the tracts lying to the eastward of all the climes. Mars dominant.

Religion.

They have no fixed religion: some worship the sun, and others are followers of *Mani*.*

The Hindus.

The Hindus inhabit the Eastern parts of the 1st and 2nd climes. They are in general believers in the metempsychosis. A few believe in the great God, but deny the prophets. They are idolaters.

They had a prince called Brahma, whom they look up to as the Imam of their faith, and from whom descended the Brahmans.

They do not deprive animals of life, and abstain from eating their flesh. The author notices, among the customs of the Hindus, that of *Suttees*; of burning the dead; of brothers marrying one woman, (as practised in Nepaul and on the Malabar Coast.)

* Mani is the Painter paraclete of Persia, who having jumbled together the doctrines of the gospel; the metempsychosis of the Brahmans; the two great principles of the Zoroastrian faith; viz. those of good and evil, or of light and darkness with the tenets of the Koran, founded the sect of Manichæans, and enrolled in its ranks Christian Bishops and Patriarchs, Mussulmans and Fire-worshippers. This impostor lived in the reign of Shapur, son of Ardesbir, king of Persia, and was put to death in that of Bahram, grandson of Shapur.

He also narrates a curious story of seven sages being called to the presence of Brahma, who propounded to them the three following questions :—

1st. Whence do mortals come ?

2d. Whither do they go ?

3d. Why have they come ?

The answers of the sages to these metaphysical queries are as satisfactory as might be expected ; they acknowledge their ignorance, and utter incapability to approach these great mysteries of the objects of the creation.

The author avers, that the statements of the Hindoos regarding their religion are various and conflicting ; some believe that this existence is one of misery, and that the next will be one of bliss.

Many, in order to escape this state of wretchedness, put a period to their existence.

The Zengs.

The Zengs inhabit the Western parts of the 1st clime. They are a despicable race, and deficient in intellect.

Their countenances are blackened by the heat of the sun ; yet they are a cheerful people, owing to the evenness of their disposition ; or to the influence of the star *Soheili*, (Canopus,) which dominates over this region.

The Nubians.

The Nubians have many cities, and an extensive territory South of Egypt. They are of estimable qualities, and profess the religion of the Nazarenes.

The Berbers, (Natives of Barbary.)

The Berbers inhabit the Western parts of the 3d clime from Barca, برقة to the extreme West, which is bounded by the *Bahri Mohit*, بحر محيط the ocean. They say the Berbers are the remnants of the tribe of *Jalút*. جالوت Jalút is the name of Goliath and Jalutieh of the dynasty of Philistine kings at Tangiers. I was informed by the Jews, that the Berbers there were genuine descendants of a colony from Philistine.

The People of the Mountain, صنف جبل

Three tribes on the shore of the sea of Kharez between it and Cazvin, professing different religions, and always at war ; some are *Hanbalis*, others *Shafhis*, and some Nazarenes.

They are different in manners and dress from all other men.

The author describes many singular customs practised by these tribes.

The Trades or Arts, الصناعات

The arts were decreed by God, and resorted to by man on account of his necessities.

The art of ploughing, (*Al-falahat*, الفلاحت) and that of the shepherd, the author justly ranks first. He then treats of soils best adapted for different sorts of grain, fallowing of ground, &c., of devices to produce grapes without stones, and grapes of different colours. Also to produce sheep of different colours, by a process similar to that which Jacob had recourse to; next follows the art of the chase; hunting the elephant; catching of birds and fishes, &c.; then the manufacture of cloth; the art of building and selecting sites for towns and cities. The craft of the blacksmith and worker in metals succeeds, and the name of the man who made the first sword in the world; viz. *Tabal*, تابل

The author mentions the conversion of iron into steel, by heating it and plunging it into pomegranate water or buttermilk two or three times.

The first ship-builder as connected with the art of the carpenter, *An-najaret*, النجارت is said to be Noah.

To ship-building follows commerce or trade, with the author's instructions how to select the principal articles of traffic. The best swords, he informs us, come from India; the finest paper from Samarcand; the best bows from Damascus; the choicest musk from Thibet, and the most inferior that from Hindoosthan. The best ambergris, we are told, is that on which black and white are mingled.

Arithmetic,, *Hissab*, حساب and writing, *Al-kitabet*, الكتابت follow. The chapter on the former clearly shows, that the decimal system of the Arabs was deduced from the fingers of the hands, which were resorted to as natural collections for reference, in computing.

To these succeed the arts of luxury; versification and music; medicine; strange diseases; remedies; cosmetics; dyeing the hair; sexual infirmities; astrology; uses of the astrolabe; magic squares; talismans, &c.; cunning stratagems of men and women; ending with a description of

geniis and devils ; ghouls ; beasts ; birds ; reptiles, and wonderful animals.

In the chapter on the art of writing, specimens are given of the Hebrew, the Syriac, Kebti or Coptish and Hindi characters. In his description of music, (*Al Musiki*, الموسيقي from the Greek μουσική) the author is a little more poetical and refined than Rousseau, whose well-known definition of this science ; viz. “ L’art de combiner des sons d’une manière agréable a l’oreille,” has been so generally and inconsiderately adopted. Cazvini styles music to be an essence emanating from the soul, exciting its best emotions, and even curing disorders. The rules of its composition he assimilates to those of poetry. He notices also its wonderful power over the base instincts of the fiercest animals.

Astrology, which the author defines as the science of predicting the destinies of empires, religions, nations, tribes, families and individuals, from the conjunctions of the stars and the aspect of the heavens, can only be practised by a pure and chaste person.

The two first are known by the great conjunctions that take place once in a millennium. The fate of nations and families by the conjunctions occurring every 240 and 20 years. Events of a year are foretold by the horoscope of that year ; and of a day, by the conjunction of the planet. A person’s nativity is calculated from the aspect of the planets at the time of his birth.

The astrologers of old, like those of modern times, placed much faith in the times just preceding the rising and culmination of the signs of the Zodiac, or the 12 mansions. A mansion, about to rise, is called the ascendant or house of life, and that just rising, the horoscope, or house of riches.

Over these houses the seven planets were thought to rule. Charms written at the precise time when a certain planet is rising in one of those mansions, are supposed to have certain powers. For instance, one written when Mars or Saturn, (both unpropitious,) is in the eighth mansion, or that of death, would be supposed to exert a very baneful influence. Whereas the presence of Venus or Jupiter, in the 7th or 10th houses, those of marriage and dignities, would be thought productive of nothing but happiness.

The natives of India, and indeed of all the East, still rule the important actions of their lives by the stars ; the inauspicious portions of each day are carefully noted in their almanacs, which are as regularly

compiled every year as the Nautical or Moore's. Of a *Takwim*, تقويم or almanac for the present year 1844, I have given a short account to the Royal Asiatic Society. It was compiled by a learned native of Alpoor on the Tumbuddra, in the Nizam's territory, a few miles from Kurnool. Mars is stated to rule over the warlike destinies of the year, and hitherto has not belied the faith placed in his fiery influence.

Many of the Mussulman inhabitants of this place never undertake a journey or marriage, until the stars indicate a fortunate moment; for which they consult their tables. Most of them have their nativities regularly calculated, and even in the naming of a child they often give him a name commencing with the initial letter of the planet which presides over the particular day or hour of the day in which the child is born; for instance, if a child happen to be born on Tuesday, they give him some name commencing with M, such as Mahomed, Murad, Mahsum, &c. since *Marrikh* or Mars, rules over that day, or at least the first hour of the day after sunrise.

Genii and Devils.

Genii are supposed to be formed from the *flame* of fire, angels from the light, and devils from the smoke. Genii differ from angels because they procreate, eat, drink, and are mortal: but devils do not die until the end of the world. The genii are said to have inhabited the world before Adam, and to have been expelled and imprisoned on account of their rebellious conduct. Some are good, some evil, some infidels, others believers: their bodies are transparent.*

In the descriptions of the quadrupeds, &c. with which the work closes, an account of the *Gour*, the elephant; rhinoceros, tapir; the *Sanad*, ساناد an animal resembling the elephant, but smaller; a species of black tiger; the simurgh, or phoenix, of which a strange-looking painting is given; hoopoe; ostrich; dragon, &c.

* The race of genii is occasionally alluded to in the Koran. According to the Magi of Persia, one of the genii presides over each day and month of the year, and the belief is, their existence was prior to Mahomedanism. Jan and Marija are said to be the parents of this race. They are supposed to have the power of rendering themselves visible or invisible at pleasure. *Malek Gatskan* is their king, and is enthroned on mount Caucasus. Some evil genii are still supposed to groan in prison for wickedness against the Almighty, committed at the instigation of Iblis; the remainder dwell in the lowest firmament at the poles, the confines of the earth, mount Caucasus, and a few in paradise.

Among the strange animals the author enumerates Gog and Magog, a fierce race who devastated the earth, and whom Alexander the Great is supposed to have subdued.*

* In the Koran it is stated that Alexander the Great travelled from the south to the north, "until he came between the two mountains beneath which he found a certain people who could scarce understand what was said. And they said, "O Dhulkarnein, verily Gog and Magog waste the land; shall we therefore pay the tribute on condition that thou build a rampart between us and them?" A wall was built between the two mountains with iron and brass, which Gog and Magog could not scale, nor dig through. Some say that this wall is situate in Armenia and Adherbijan: others on the confines of Turkestan; but I cannot help forming the idea, that the tradition bears allusion to the great wall of China, which spans 1500 miles of its N. frontier from the Yellow Sea to the Lingtoo Mountains; built 2000 years ago, to restrain the hordes of Mongol barbarians, who for ages past were wont to devastate that granary of this portion of the East, the great plain that occupies to the extent of 210,000 square miles the N. E. portion of China, with an industrious population equal to that of two-thirds of Europe.

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Notes taken on a Tour through parts of Baloochistan, in 1838 and 1839, by Hajee Abdun Nubee, of Kabul. Arranged and translated by Major ROBERT LEECH.

In the summer of 1838, while residing at the court of the late Preface. Meer Mehrab Khan Brahoe of Kalat, Hajee Abdun Nubee was introduced to me as a merchant from Mukrán, who had a fine riding camel in his possession, an animal I had been desirous of purchasing, since seeing one of them galloped round a ring, a feat I never before believed the bulky "ship of the desert" capable of performing. The riding camel, or mabree of Mukrán, however, is remarkable for the slimness and symmetry of its make, and for its consequent agility.

The Hajee's manner was very prepossessing, and his conversation showed him to be a man far superior to the generality of those with whom it had been my fortune for the few past months to associate. He spoke Persian of course, Arabic, Hindustanee, and the Mukránee Baloochkee fluently, and Poshtoo tolerably. He had besides travelled much in Arabia and Persia, a little in Hindusthan, and had resided at different times for months together in Mukrán. For instance, in 1824, he spent eight months at Panjgoor with his father, who devoted a great part of his time to the instruction of children, and on that account became well known in these parts as "*Akhund Kabulee*."

This seemed a favourable opportunity, and one not likely again to present itself before my departure for Shikarpore, which was then fast approaching, for obtaining information of Mukrán and of the surrounding parts of Baloochistan; and as the Hajee informed me he had before been in the service of Europeans, I proposed to him that he should undertake this tour, promising him on its completion, the approval of the "Sarkar Company Bahadoor," and some compensation for the loss incident on the temporary abandonment of his mercantile pursuits.

On the Hajee accepting these terms, and after I had with the greatest difficulty induced him to receive a small sum of money to meet his expences, I furnished him with a passport in English, never to be produced except in situations of imminent peril; taught him the points of the compass; gave him his instructions which he fulfilled to the letter, and dismissed him with strict injunctions never to be seen near my encampment, or in communication with my people during the remainder of my stay at Kalat.

'On receiving my instructions and leave from Major Leech, I lost no time in disposing of the remainder of my Bombay investment to the best advantage, and laying in a fresh one adapted to the Mukrán markets. The Bombay articles besides kariona (grocery,) and pingee (pedlery,) were the following cloths: jámdánee (coarse flowered muslin,) kamdonee (coarse muslin with colored flowers,) malmal (plain muslin,) gimty (dimity,) Korasan unbleached calico, shabee duryai or konawez (strong silk fabric of Yezd,) mashaeroo (coarse satin of Karachee.)

The only article remaining on my hands after disposing of the above was haldee (turmeric,) this I took with me to Mastung and bartering it for rodan (madder,) returned to Kalát, and there completed my investment with the following fabrics, which are articles of import to Kalát from Shikarpore, suparee (the common coarse cotton cloth of Sindh bleached and dyed with bakam woods,) telee (the common coarse cotton cloth of Sindh unbleached and dyed in madder,) cheent (coarse Shikarpore chintz,) Shikarpore toosee (coarse cotton cloth of dark blue color with a white stripe,) Multan lungee (coarse thin dark blue cotton fabric with silk edge and ends,) kesh of Sindh (coarse cotton plaid,) and lyáf of Sindh (colored coverlid.)

These are only a few of the many exports from Kalát to Mukrán. I did not purchase more, as the above were quite sufficient credentials to support my character as a small merchant.

Departure. These preparations and an attack of illness at Mastung, delayed my departure till the 2nd October 1838, when I had the satisfaction of leaving Kalát, with the conviction, that not the remotest kind of suspicion was entertained by the Brahoees as to the real purport of my pending tour, and so emboldened was I by this, that I did not hesitate to take advantage of the escort of the Khan's Shahghásee, Noor Mahommed, who was on his way to Kech and Panjgoor to collect the revenue, with a body of 300 horse, foot, and camelry, (armed men mounted on the camels.) The title of Shahghásee is of Turkee origin, and is a corruption of Ishaka Kasie, an officer about imperial courts, whose duty it was to superintend the ceremony of presentation.

The office is sometimes hereditary at the Kalát court, and Deen Mahomed, the present man's father, was Shahghásee to Mahmood Khan, the father of Mehrab Khan. He had two sons, Ghulam Mohommed and Ghulam Ahmed. The duties of the Shahghasee are numerous; first he is master of the court ceremonies, to enforce the observation of which he is assisted by forty chobdars or mace-bearers. He is also head constable, and with his bailiffs or mahsoliaes executes all arrests, and he is moreover keeper of the sword of state, which office is not at all a sinecure, nor is the instrument an idle one, as with it he has himself to behead all state culprits; in this capacity he is called "*Meer Ghazab*," or "Lord of wrath." I mention that the office is sometimes hereditary, as in the time of Nasseer Khan, Mehrab Khan's grandfather, it was held by Shahghásees Barfee and Misree, of quite a different family from that of the present man.

Noor Mahommed is a khanehzad of the Khans; this word literally means "home-bred," or the progeny of a slave. Mehrab Khan has a large number of men, of which he has formed a kind of body-guard, and besides these slaves, Hindoos and a few Dehwans, allows no one to reside within the walls of Kalát. They are divided into several sects; viz. Khorasanees, or progeny of the captives made by Meer Nasseer Khan in his Khorasan campaigns; Gudads, or Sikh captives;

Kaloghzair, or Crowites, from their deep black color and descendant of slaves purchased in Beloochistan, or received as presents. One caste considers itself superior to another, when with aristocratic contempt, honour among thieves is only equalled by pride among slaves.

From Kalát to Rodenjoe, the first stage is one of 7 kos, the Rodenjoe. general direction of the road being S. W. The distance is unaccountably given as 25 miles by Pottinger. There are about 30 houses, and a few willows outside the village. The place is called Rodenjoe, or the canal of Roden, from a man of that name who first dug it. It is nearly dried up, and was not again re-opened until about A. H. 1230, when Meer Mahmood Khan made a grant of the land to Mulla Izzut, who not only enlarged the spring, but dug a new *karez*, (subterraneous aqueduct,) which he called Alee Abad. At four coss from Kalát there is water in a stagnant pool or *kahnee*, which is situated in a rivulet bed.

From Rodenjoe to Suhráb is a distance of 12 coss, the general direction being south ; from the former place four coss is Suhráb. Surmásung (antimony stone.) The present inhabitants of the neighbourhood do not remember ever having heard of this mineral being procured ; Mulla Izzut discovered copper in the neighbourhood, as well as in two other situations near his estate, but was afraid to work it for fear of exciting the cupidity of Mehrab Khan. There is spring water at this place, which is often made the rendezvous of hunting parties from Kalát and Rodenjoe, but no vestige of the serai, mentioned by Pottinger, is to be seen. This is surprising, as a Persian proverb says, "if the Church is fallen, the chancel can be traced." From Surmasang 1 coss is Dambi Guhram, (*damb* meaning a small mound,) where there is one well which is never used, and a few yards further on, is a stagnant pool of brackish water in a rivulet bed, which is called Gandagen, or "stink." A short distance in advance is a cross-road, which leads to the two villages of Hajeekah and Gurgut. The former contains about 10 houses and a garden ; there is running water in the place, which belongs to Nabsee Buksh Umaranee. From Gundagen to Suhráb is 7 coss over a level road ; indeed the whole road from Kalát to Suhráb is a good gun one. In the valley are scattered 7 khels of Brahoees, and in the principal village, which is surrounded by a dilapidated wall, are 15 shops of Hindoos. There

is fine running water, but the chief part of the cultivation depends on the rain. A transit duty is levied here of 1 anna on each load, and supplies are plentiful and cheap. For instance, a fowl for 1 Kurreem Khánee rupee, or 2 annas; a sheep for 1 rupee Kashonee, or 14 annas; and a seer of ghee for 6 annas. At this place the road to Kachee, through the Moora Pass, separates. The governor, or Jõe Nishein of Suhráb, is Taj Mahommed, an hereditary slave of Mehrab Khan's, being at the same time a nephew of the Khan's grandmother Beebee Khatijah, who was a slave girl of Meer Nusseer Khan. The government of each district is vested in a naib or deputy, who has a Jõe Nishein, or intendant, under him for every town of his collectorship.

From Suhráb to Gidar is 8 coss, general direction south, a gun road, the precincts of which are cultivated when there is rain. At Gidar. 5 coss a little to the left of the road is a well which is the only water to be had in the stage. There is running water at this place from a *karez*, and to the north of the fort are mulberry and apricot trees. There are not more than 30 houses in the fort of Rodeenee Brahooes, under one Chattoo, who are at present at enmity with the Mahommed Hosainee Brahooes. The fort is a small insignificant one, like most forts in Baloochistan, being about 80 yards in circumference, and therefore only deserving the name of a watch tower; indeed they are only built for musquetry war. The ryots pay to Mehrab Khan "*uchi*," or a tithe of their produce, which varies according to the rain.

Here I parted with the Shahghásee, who was going direct to Panjgoor via Mashkai, and giving me much advice in charge to my friend Mulla Haibol Kashanee of Panjgoor; made up my mind to go by the short cut to Kharan, and put up for the night at the *khel* of Baiee Khan, chief of the Sumalodeg Brahooes to the west of the Gidar plain; he was an old acquaintance of mine, and therefore received me kindly. These Brahooes are not at all strict with regard to their females, and will give a stranger a bed in the family *gidon*, or goat-hair tent, even pressing him, in case he should not have lost his *kharasan*, modesty.

From this *khel* I next morning hired a guide for half *jorees* or pieces of coarse cotton cloth, and borrowed a riding camel from the Khan. Towards evening I arrived at the top of the Koh-i-Nirvisht over an infamous road, hav-

ing at several parts to dismount and lead the camel. The general direction was West, and I should think the distance could be not less than 10 kos. The name of "Written Mountain," would suggest the site of some old inscription, but I could never discover the origin of the name. On the top of the mountain I found a stagnant pool of rain water, where I passed the night in the open air, which I found very cold.

Next morning I commenced the descent, and coming on a bullock's "halt," or encampment, bartered some pepper and turmeric for a little butter milk and butter; again proceeding still over a descent for six kos arrived at a well, where I breakfasted; again starting, I arrived at

Kharan. Kharan, at the fort of Meer Azad Khan Nowsherwanee towards evening, having I calculated come 12 kos from the top of the Koh-i-Nirvisht.

From Gidar to Kharan there is a road called Peeshukan, which turns the Koh-i-Nirvisht, and takes laden camels 3 days.

Peeshukan. On arriving at Kharan, I proceeded direct to the *mehman-khanah*, or traveller's bungalow, and to my astonishment met Syud Ali Mahommed of Mastung, who had seen me at Major Leech's tent. He was very inquisitive, and his cross-examination was only terminated by the arrival of a man from Meer Azad Khan, requesting my presence in the fort. Here I was most graciously received on account of the friendship that existed between the Khan and my father. After that for my health, the next enquiry was of course for news from Kalát. I told him in a few words, that Shah Shooja-ul-Mulk was expected in Khorasan; that Mehrab Khan had determined to espouse his cause, and ended by advising him to bake his bread in the same oven. Before leaving him, he expressed his determination, that as soon as the Shah should arrive, he would send for me from Panjgoor, and despatch me to court as his envoy, with a *peshkush*, or tributary offering of some of his best riding camels and grey-hounds.

I passed the night in the *mehman-khanah*, and in the morning set about business.

The district of Kharan is bounded on the North by Koh-i-chhar Kahan, four hump hills and Kalag; on the South by the desert and Boundaries. district of Ruksan; on the West by the desert and Washuk; and on the East by the Tozapeer and Koh-i-Nirvisht, sometimes

called Koh-i-Kond. Kalag is situated at the base of a perpendicular
 Kalag. called Rash-Koh, and is furnished with a small mountain
 stream by means of which are cultivated cotton, juwaree, and fruits, to
 a small extent, such as pomegranates, mulberries, grapes and peaches ;
 date trees also thrive here ; the rest of the cultivation of Kharande-
 pends on the rain.

The term Kalag is applied in Baloochistan to any small village
 Term Kalag. having a few huts and date trees, with a little water.

In the district of Kharan and Rukshan are twelve tukars, or divi-
 sions, as follows:—

Kaloguee Sirjapad.

Hurako.

Toolazai.

Hajeezai.

Toghapee.

Eessazai.

Miskonee.

Kulbodanee.

Jodan.

Kandooree

Gazakee.

Sujadpád-i-Dashlee.

Besides these, in the district of Kharan, are Sasolees and Halakzais.
 Meer Azad Khan has in his pay, constantly kept up, a body of 60
 Force. horsemen, mounted on his own horses, and might, out of
 the population of 3,000 men, collect 1,000 available in
 time of war. He collects no revenue in ready money ; that in grain,
 when the year is plentiful, may amount to 3,000 bags of wheat, barley
 Revenue. and juwaree, besides 400 pats, or packages of dates, each
 package weighing about a Company's maund. He never
 over-exacts fines ; he is not tributary to Kalát, but to Candahar, to
 which place he ought yearly to send 18 camels, 13 of which he collects
 Tribute. from Kharan and 5 from Washuk. There are two tribes
 in Kharan, who neither pay a tithe of their lands or ca-
 mels ; viz. Dagarees and Hijbarees. They are said to have been the
 original lords of Kharan before Azad Khan seized it.

The deputy, or Jõe Nishein of Meer Azad Khan is his brother,
 Fateh Khan, a perfect idiot ; whereas the former is a tolerably informed
 man for a Baloch. The ryots of Kalag however complain much of
 Fort. his extortions. The fort is a small mud one, the walls be-
 ing 160 yards in circumference, 5 in height, and 1 in thick-
 ness, having two entrances in the East. There is one well inside, the
 water of which is somewhat brackish.

A transit duty is levied here of 1 *jooree* or piece of coarse cotton cloth per load, and a tax is levied of 2 *joorees* on every camel purchased in the district, of which there are a great number, and 1 Rupee Kashanee on every load of grain.

The buildings and firewood are both from the *gaz* or tamarisk.

The productions of Kharan are wheat and barley, which are reaped in the beginning of June; juwaree, which is reaped in the middle of August; wool and ghee which are procurable chiefly in the latter end of May. The grain is exported both to Kalát and Panjgoor.

Ready money is scarcely known; every thing is bartered, and from cloth is the only approximation to a common standard of value.

In Kharan there are five or six ironsmiths and one Hindoo, whose capital does not exceed 1,000 rupees,—a large one for Baloochistan, however; there are many carpenters, and in Kalag there are 60 weavers.

The *kasa* of this place is a measure weighing 2-4 Company's seer, and the maund is somewhat more than 2 seers.

The imports to Kharan are joree cloth, suparee, telee, khesh and the other Shikarpoor cloth. Articles to a small amount, adequate to the consumption of the district alone, as Kharan is not a bunder or central mart.

The best season for a merchant to arrive at Kharan is at *japab*, or spring, harvest time. The hire of a camel from Kalát is 5 Kashanee rupees, and from Gwodar 10 rupees. This year great profit was made by the export of grain to Panjgoor and Mukrán, where there is still a great dearth.

I remained five days at Kharan, and in the sixth I took my leave of the Khan, when I presented him with a vial of attar and an ivory fine tooth comb, which latter called forth great admiration, and of course intended for the mistress, whose favor very often leads to the esteem of the master of the house, although the lordly Mahomedan would not like to confess such influence even to himself. I also to-day hired a riding camel to take me as far as the next stage for 3 *joorees*. On the 13th October 1838, being the 12th day after leaving Kalát, I left Kharan, and pro-

ceeded in a West and W. S. W. direction for 5 kos to Band-i-Bijad, over a level road, the cultivation on the precincts of which Band-i-Bijad. depends on the rain. At the stage are 5 or 6 *gidons* of Baloochees, and a number of tamarisk trees.

14th October.—Proceeded in a S.W. and West direction 10 kos over a level plain without water to Band-i-Kurreem Khan, where there are no habitations, although there appear to be a large number in the neighbourhood, judging from the large number of cattle and sheep brought at mid-day to be watered at the Band. I purchased one of the latter for one *jooree*, the fleece of which must have weighed nearly 12 seers, whereas the *jooree* was not worth more than $\frac{1}{2}$ Kashanee rupee. The water of this Band is not sufficient for the purposes of cultivation.

15th October.—Proceeded in a Westerly direction 4 kos, having on my right a jungle of tamarisk, and on my left the desert; and 4 kos further in a S. W. and S. S. W. direction over a desert plain to a well called Choh-i-Jalai, the water of which is rather Choh-i-Jalai. brackish; there are no habitations, and only a few tamarisk trees, which with the *kaghaz* bush, forms food for camels. From this stage to Washuk, there are two roads; on the one to the right there is no water, whereas there is water in three places on the one to the left; but without a very good guide, they are likely to be missed, and then God have mercy on the poor traveller.

16th October.—Taking water with me, I proceeded in a S. S. W. direction 6 kos, which appeared to men and animals 12, the road being over an undulating plain of loose sand; and spent the night in this *chol* or waste, in which however, there are *gaz* and Choh. *kaghaz* trees for the camels.

17th October.—Proceeded in a Southerly direction 2 kos to Washuk, having travelled from Kharan in the day time, for the purpose of seeing the road, whereas travellers invariably perform the journey at night, from the dread of thirst.

To the North of Washuk is Kharan; to the East Kal; to the South Rakshan; and to the West Gormdel. To the immediate west and east, it is bounded by hills, to the north by waste and to the south by a ravine and hills. Wheat, barley and juwaree are cultivated at Washuk by the rain. There is also a

katez, that turns a small mill near the huts of Meer Kureem Khan Halikzai. The inhabitants of Washuk do not exceed 800 male adults. Of the five camels paid yearly to Kharan, the Halikzais furnish $\frac{1}{3}$ ds,

Tribute. the *nakeeb*s or *serfs* $\frac{1}{3}$ d, and the *Kudhadonees* $\frac{1}{3}$ d, the fractions being collected in wheat. The Halikzais

do not pay a tithe of their lands, it having been remitted by the ancestors of Azad Khan of Kharan, as "the price of blood," or *khoon-*

Principal Men. *bha*. The tithe of dates may amount to 400 *pats* or packages. The principal men are Kureem Khan,

Alum Khan, Meer Sahadat, Ameer Khan, Juma Khan, Meer Bijad, and Fukeer Mahommed. Meer Azad Khan yearly sends a deputy to collect the revenue, but he does not, nor can he, hit them very tight.

There is a small insignificant tower in Washuk, and the inhabitants store their grain in pits in the ground.

From Washuk to Jalk is an 8 days' journey, and to Kal 7 days.

Duties. A tax is levied on strange merchants of 2 *jorees* for every camel purchased, and they are numerous, and Kashanee import duty for every camel load of goods.

The inhabitants live in *gidons* in the summer, and in mud and mat huts in the winter; they use for firewood the *gaz*, *kanboor*, and *kaghaz*; and for building, the date stem.

Exports. The productions which form articles of export are ghee, wool, dates, wheat, barley, and juwaree. Dates this year were with great profit exported to Kharan, Nashky and Welat, on account of the dearness of grain at those places.

Date Harvest. There are no resident Hindoo tradesmen here, but a few come at the grain and date harvest time, which latter is called *Hamen*.

21st October.—Having hired a camel for two *jorees* to take me as far as Panjgoor, made my preparations for starting. I found I was to

Companion. have the company of Kurreem Khan Halikzai, who on hearing of the Shahghásee's intended visit to Panjgoor, had been ordered to proceed to the latter place with 30 match-lockmen to hold out the fort of Khardábódan, which belongs to Muheem Khan Nowshervanee, uncle of Azad Khan, against the Khalát troops, until letters could be received from Sardar Raham Dil Khan of Candahar, who no doubt would write to Mehrab Khan, de-

preventing any hostile proceedings against a relation of his vassal Azad Khan.

This day proceeded in a S. W. direction over a level road 10 kos to Chok-i-Gazo, and again at 7 kos to the right, under the same hill is another spring called Chakul-i-Kondai.

22nd October.—Started, and at 4 kos arrived at a rivulet bed, to the right of which are two pools of water, called Shah Dost-aph; here I spent the heat of the day, and again starting proceeded another 4 kos, where to the right in the hollow of a ravine is another pool, called Mazar-aph, surrounded by tamarisk trees. Here I spent the night, eating *kabab* and listening to Baloch lays, having purchased a sheep from a neighbouring *khel* for one *joree*.

23rd October.—After a ride of 5 kos arrived at a defile called Tang, where we alighted under the shade of tamarisk trees, and cooked our bread in the sand, first scraping a cavity under where the burning logs had been, putting the bread in, covering it up, and again lighting a fire over the place. The bread of course requires a little rubbing, brushing and dusting after being taken out of this patent oven; 2 kos further came to a narrow Pass along the side of a mountain very difficult for a single unladen camel, it is called Muradee Gwarjon. Here I was obliged to dismount, as one false step of my camel would have precipitated me, if on him, into the abyss below. After passing this danger, I put up for the night one kos further on.

24th October.—Proceeded sometimes in S.W. and sometimes in a W. S. W. direction, 10 kos, over a very difficult mountainous road, in some places so narrow as scarcely to admit of a single camel passing; on the road, came on the Hadjee Kaur, or “Dragon’s ravine,” so called from a dragon that infested it, until Malik Dewar, a famous Baloch saint, whose tomb is at Washuk, converted it by his curse into stone just as it was retiring into its cave. A green colored stone is still pointed out with awe and reverence by the Baloches as the tip of the dragon’s tail. From the pools in this ravine we filled our *masheks*, or water bags, as there was no water to be expected at the stage which has not even a name, not being a fixed one. The mat flag is plentiful in the Kaur.

25th October.—Proceeded in a S. W. direction in the bed of a *kaur*, or ravine, 6 kos between hills to Panjgoor, which I should say bears directly S. W. from Washuk. No forage for horses is to be procured on the road.

The district of Panjgoor is bounded on the West by Tang and Param; on the South by Balogatar; on the East by Grishk and Boundaries. Rakshan; and on the North by a part of the range called by Pottinger, the *Mach*, or date tree mountains, which is known on the Panjgoor side as Sabz-Koh, or green mountains.

The following are the villages of Panjgoor according to their size; Villages. viz. Eesai, Bunistan, Tasp, Khudabadan, Gormkon, Washbood, Sordoo, Sori Kouron, Kalag, Damb and Eraf Chitkan and Duzanaph. The Kouri Rakshan runs through the valley of Panjgoor Rakshan River. from East to West; but some of its water reaches the sea on account of the number of bunds thrown across it, and canals drawn from it for the irrigation of the *Dasht* and *Koochag*, or remote lands. The greater part of the cultivation depends on the rain, which is owing to the ignorance, and partly to the apathy of the inha-

bitants, as water is to be found within 10 and 15 Capabilities of soil. *kulach*, or fathoms of the surface. Were it not for this apathy of the cultivators, and short-sightedness of the government, the cultivation might be doubled and trebled. The productions are

Productions. barley, wheat, beans, and peas, in the beginning of summer; and rice, juwaree and dates in the beginning of autumn, cultivated with the river water; wheat and red juwaree are produced

Nature of Soil. in the high lands where there is rain. The soil of Panjgoor is a stiff loam.

In the village of Eesai are two *karez*s, one called *Waramood* and the other *Shakaruk*, both commenced in the skirts of Sabz-Koh, and Kares. terminated under the Rakshan Kour. The gallery of the *karez* is a very wide and high one, and seems a work of such incredible labour, that the present degenerated men of Panjgoor believe it to be that of giants or genii. Panjgoor is ruled by a deputy governor, or *jode nishan*, on the part of Meer Mehrab Khan, who is a slave, by name Mulla Peer Mahommed, who collects only half the revenue; the other half belonging to the tribe of Gichkees, who according to popular belief, became possessed of it in the following manner:—

The Gichkees are believed, and believe themselves to be a colony of Gichkees. Sikhs, and this belief is supported by the fact, that they are the only tribe in Baloochiethan that do not allow the razor to touch their heads. Their reason for originally settling at Gichk was, that they found the inhabitants very peaceable and unresisting. Soon after their arrival, they commenced forays in the Panjgoor district, the inhabitants of which place not able to resist them, laid a complaint before their governor at Kech, who was a descendant of Cyrus, who lent them a force with which they succeeded in nearly exterminating the Sikhs. But the few that remained, took refuge among the Brahooes, and got them to join forces to attack Kech; to this they consented only on condition of having half of all the conquered districts, which they enjoy to the present day. The Gichkees are fond of surrounding the common bedstead, on which they carry their dead to the grave, with a red silk cloth, which is divided between the gravedigger and priest.

The governor on the part of the Gichkees is Meer Ahmed Gichkee, Governor. son of Meer Hasan, who was Meer Nusseer Khan's son-in-law.

The revenue in ready money amounts to 2,000 Kashanee rupees, Revenue. six of which go to a Seetaranee ducat, and that in grain may amount to 10,000 Panjgooree, or 500 Company's maunds at the tithe rate for the summer crop, and $\frac{2}{3}$ rds of the same quantity for the autumn crop. The revenue derived from dates also, at the tithe rate, amounts to about 6,500 Company's maunds. This fruit is so plentiful, Exuberance of Dates. that cows, asses and camels are partly fed on it; the very dogs get their share, and in winter horses are given date water instead of the pure element. The Panjgoorees even declare that some of them remember once when the Rakshan Kaur swelled to an extraordinary degree, and carried away part of their date groves, that embankments were made of purchase* of dates, to stop the devastation, and divert the current. The Brahooes of the north soon get ill at Panjgoor, whereas the Mukránees look upon it as their paradise; snow some- Quality of Water. times falls here. The river water is much superior for drinking to that of the *karezes*, which is very indigestible.

The principal men of Panjgoor, with Meer Ahmed, are Mulla Principal Men. Haibatim Kashanee, Mulla Boieeyan Ibrahim, Sher

* Sic. in MS.—parcels?—Eds.

Mahomed, Meer Zaly Keenazair, and Meer Ghulam Hussain Kambaranee, a man of superior talents and what is more, scarce, veracity; Konda Noman and Meer Sala, Meer Shah Sevai, Meer Suzad and Malik Deenar.

The men of Panjgoor are at enmity with the Nowsherwancees of Kharan and Kooshan.

The principal fort of Panjgoor is that of Eesai, it is 1,200 paces in Fort. circumference, its walls in some places are 10 yards high, in others 5, and in others a man can run up. There are three wells inside, said to be of the time of the Kaiganees kings, which are not used. It is a very old fort with a small one outside, to the west are the remains of a half driven mining gallery. The ground on which the fort is built, is of the stiff loam called in Baloochistan *kurk*.

From Panjgoor to Beloo is 15 days' journey over a good road; to Roads. Kalát 12 days for laden camels, via Gidur; before arriving at which latter place, there is a difficulty to be surmounted. From Panjgoor to Kech 7 days, without habitations, except at Bankada, the 5th stage. Grazing for camels being at all times plentiful, but grass for horses depending on the rain.

To Ormara 15 days, and to Gwadar 12 days, via Ashap and Keel Kour.

The domestic animals of Panjgoor are camels, sheep and goats in Animals. plenty; cattle, asses, and a few horses belonging to the chiefs. There are no buffaloes.

The wild animals are hogs, deer, foxes, horses, and jackals, which latter are very troublesome.

The fruits of Panjgoor, besides dates, are pomegranates, grapes, figs, Fruits. mulberries, lemons, limes, peaches and apples; some of these just in sufficient quantity to swear by, as the Khajee, who when asked "*Baghe daree*," have you a garden? answered "*Bhale darum*," yes, I have one.

The dates of Panjgoor, which last three months, that is, from their Dates. first appearing to their disappearing from the trees, are exported in every direction. They consist of seventeen different kinds, such as *muza watee*, *kaloot*, *subzo rabaiee*, *dandaree*, *kuroch*, *satharo*, *jamansor*, *kuraba*, *hush kuch*, *papo*, *washkouk*, &c.

The Panjgoorees pride themselves much on their dates, and a farmer when they are ripe, will look up at the red and yellow clusters,

and exclaim, "Ah what a heavenly halo." The *rabaice* dates literally mean "godlike," and the *sabzo* are called "Protect like." They have even verses in praise of this fruit.

The manner of fecundating the female date trees as given by Pottinger, is quite correct, with the exception of one point, *i. e.* no incision is made in the core of the female tree, but a stalk of the male bunch is inserted with its powder in the half-opened bud of the female, which is then hid up for four or five days; the male flower does not lose its qualities by being kept 4 or 5 days after being cut. The Baloches cut the fresh male bud with the last year's dates.

The trees are climbed with a strong stiff wisp of flags, tied to the climber's waist and the tree.

Dates are chiefly exported in two states; 1st, *khurma*, or dates ripened on the tree; 2d, *chumara*, or dates plucked when beginning to ripen, boiled and dried in the sun, chiefly of the kinds *kaloot*, *sabzo*, and *mazawatee*. Half ripe dates called *darupruch*, especially of the kinds *doudaree*, *sabzo* and *washkouk* are much esteemed for immediate use; they are sometimes cut in halves and exported in strings.

The natives build with the date stem, and use it as well as the Wood. dried mat flag or persh, as firewood. The higher classes Dwellings. live in mud houses, and the poorer in huts of trellis-work covered with mat flags.

This year was one of great scarcity, and the Hindoos sent for their Scarcity. grain from Gwadar, unheard-of reversion of things like sending caraway seeds to Kirman.

Besides 25 small Hindoo resident traders, there are 20 blacksmiths, Artizans. 12 carpenters, 10 shoe-makers, 7 goldsmiths, 4 hut makers, and 500 weavers. Kalat merchants come at the autumn harvest to purchase dates, bringing with them the articles exported from Shikarpoor, while the merchants from Beloo bring Kashanee Merchants. rupees, and those from the bundur of Gwadar come at the summer harvest to purchase ghee and wool for the Bombay market, and bring with them Seetaranee ducats and Bombay groceries and cloths. The largest merchant of Panjgoor is Rahmoo, an agent of Mayan Bhattya, son of Moola Keechee; and has not a larger

capital than 8,000 rupees employed in trade; a very rich man for Panjgoor.

At Panjgoor is manufactured a coarse cotton cloth of two different breadths, both small, one called *semor* and the other *chhamar*. The weavers make comparatively little use of their wool at home; they merely manufacture felt rugs, as their fabric for the hot weather resembles bunting.

I bought some common shawls from Bombay, which I wanted 6 rupees Kashanee each for; the common remark made was, "Why should not the English be a rich nation? their merchants come and buy a couple of hand-fulls of wool from us for a few needles and gloves, work it into a fabric, and sell it to us for 6 and 7 rupees."

Among the groceries exported from Bombay, the cloves and cardamums are not eaten, but worn in strings round the necks of the women, and form two of the ingredients of a certain cosmetic, that is very prevalent and fashionable in the country, on which a great deal of money is spent; they also are put in a kind of pomatum made of sheep's tail and fat, and colored with lemon leaf, with which they smear their hair.

The following are the estimated yearly imports to Panjgoor:—

Coverlids, .. .	} 20 camel loads,	} From Kalát and Kochee.
Telee Cloth,		
Japan ditto,		
Cotton Plaid, ...		
Lungee,		
Soosee Cloth,		
Chintz,	} 1 ditto ditto,	} From Bombay, via the seaport of Gwadar.
Madder, 10 camel loads,		
Nor, .. 20 ditto ditto,		
Lead, .. 2 ditto ditto,		
Salt petre, 5 ditto ditto,		
1 ditto ditto,		
Coarse flowered Muslin,		
Checked ditto,		
Dimity and calico ditto,		
Silk Daryai and Mashroo, 100 pieces,		
Groceries 18 camel loads,	}	
Pedlery, 1 ditto ditto,		
Silk Thread, maunds,		
Handkerchiefs, 5 camel loads,		
Pearl, Coral and Glass Beads, 500 rupees' worth,		

The rupee current is the Kashanee rupee, the Seetarammee ducat, and the Mahommedee rupee. The latter in accounts is reckoned as $\frac{1}{4}$ of Kashanee and $\frac{1}{2}$ of it is called Shaithan, which latter they have no lower fraction.

They measure nothing, every thing is sold by weight; 1 Panjgoor Weight. maund, 2 Company's seers, and a fraction; 24 *kejas* 1 maund, and the *keja* weighs 8 Kashanee rupees.

A merchant, sending an agent to Panjgoor, fixes the amount of capital which he is to trade with, and the agent receives half the profits; but should the agent himself require an addition to the original amount, the merchant charges him interest for the same, and deducts the amount from his half share of the profits.

The merchants from the sea ports seldom receive ready money for their articles, but cloths or *gudh* of the kinds *sermar* and *chaimar*, manufactured at Panjgoor, generally at the rate of 20 cubits the rupee; with this and ducats, wool in large quantities is alone purchasable.

The hire of a camel from Gwadar is one Seetarammee ducat.

The peculiarities in the appearance of the people of Panjgoor are, that the men seldom gird their loins or wear a turban, but a bag cap; and the women divide their hair into two horns, which they stiffen with gum.

The Panjgoorees have peculiar habits; for instance in summer, they sleep quite naked, having thick curtains round their beds as a double preventative against musquitoes and heat; and when they feel unwell, they are very anxious to procure raisins or apricot kernels, which latter they consider a specific even in cases of dimness of sight.

There is a common custom, when a boy is circumcised, for his father to proclaim to the assembled guests some grant of land or chattels, instead of bequeathing it to him at his death; and before a boy puts on his wedding clothes, he is taken without the village, and washed with soap in public, for the satisfaction of the bride's relations, with cold water even in the middle of winter.

A Balochanee will not give her daughter to an Affghan, for fear of her heart breaking under the strict, decorous seclusion in which she would be obliged to live, and the girl herself would hold in detestation a shaven-headed youth, without a couple of long locks for her to comb and oil. The Balochee also objects to eat horse-flesh.

The Baloochees have a great prejudice to travelling. It is a common thing to hear a mother wish a wayward son a journey to Kabul; even the pilgrimage to Makka is regarded with a feeling of shame, something approaching to that of being obliged to beg; and the Baloch pilgrim is much commiserated, and perhaps not a little despised, for foregoing the pleasures of love-making and fighting, prominent characteristics of the innate disposition of a true Baloch.

The Baloch of Panjgoor differs in the pronunciation from the Baloochee Language. lochky of Scindh. The former having the letter *s* for *th*, as the Panjgoorees call a mother *mas* instead of *math*. They also change the *kh* into *k*; their dates they call *koorma* instead *khoorma*, and a teacher *ahmed* instead of *akhund*. They moreover substitute *g* for *gh*, as they call a razor *istarag* and not *istaragh*. They also change *kh* into *k*, as they call an uncle *nako* and not *nakho*.

Illness detained me at Panjgoor for nearly a month and a half, and my resolution was nearly failing me. Indeed had I not accepted the small advance of money from Major Leech at Kalát, nothing would have induced me to prosecute my journey. The people of Panjgoor, moreover, tried to alarm me, by their sketch of the character of the chief of Koohag, which place I had been instructed to visit. However, I procured a letter of introduction from Meer Ghulam Hussein Kamburane, and hiring two matchlock-men, set out.

10th November, 1838.—Travelled in a westerly direction 8 kos, Bunsang. over a good level road to Bunsang, where I found water, wood and fodder for the camels, but no habitations; and next morning starting at day-light, and proceeding in a W. N. W. direction over a tolerable good road 9 kos, arrived at Askan Koh, or Deer Askan Koh. Mountain, a place without habitations, having crossed the Askan Kour, or Deer Rivulet.

12th November.—Eight kos over bad road in a W. N. W. direction, Mashkad. brought me to the other side of the Kour, or river Mashkad, into which six streams are said to discharge themselves. Sudden swells are so frequent, that it has received the appellation of “Suwas Bondi Zantáláh, implying, that the man deserved to be a cuckold who should be so foolish as to stop in the least, even to tie his shoe.

13th November.—Four kos over a difficult road in a N. W. by W. Koohag. direction, brought me to Koohag, which I approached

with fear and trembling. On my arrival I was immediately summoned to the presence of Murad Khan Kausherwancee, the chief, who is cousin of Azad Khan of Kharan; my companion reminding me that I had been warned not to attempt the road. After salutations had past, the Khan seemed on the point of asking me how I had been so bold as to enter his territory with merchandize without his invitation; I therefore forestalled him by requesting a few words with him in private; taking him on one side I told him that his cousin had expressed a wish to see his nuptials with his deceased brother Mahommed Khan's widow celebrated at Panjgoor. "Ah Ahmed," said he "but the lady does not fancy me." I replied, "Can it be possible that

Charm. you are not aware of the efficacy of my charms? I will give you four if you will keep them secret, one adapted to each of the four elements, one of which at least must suit the constitution or disposition of the lady." I at the same time delivered my letter of introduction, which was a very strong one, and taking my leave, joined my companions, who were astonished to see me return whole in property, as the Khan had been previously heard to say, that the game had come itself to the fowler. Koohag is bounded on the north by the Koh-i-Segaham, beyond which is the district of Chagai, inhabited

Antimony. by Regees three stages distant. In this hill is produced a kind of inferior antimony, which is brought by the Regees with the salt of Peer Kaisac to Panjgoor; it is not used for the eyes, but for camel and sheep sores.

There is little cultivation, but that of the date and nearly half the land composes the estate of Meer Murad Khan, son of Muhim Khan, brother of Meer Abbas Khan of Kharan. He has no retainers but his own slaves, with whom he exacts a little revenue, 3,000 Panjgoor maunds grain, 50 Co.'s maunds dates, and 400 rupees from his neighbours, the inhabitants of Goruk and the Koh Baloch, who pay it from being subject to his forays.

Some years back a detachment of Persians from Kirman, under one Abul Kasam, laid siege to Koohag, but were obliged to retire, content-

Friends and Enemies. ing themselves with one blind camel as tribute. Meer Murad Khan is on good terms with Mohummud Shah of Silb, who is indeed his uncle, with Meer Gojigan of Dezak, and with his cousin Meer Azad Khan of Kharan; at the same time he is at enmity

with Meer Ahmed Auchkee and Mulla Haibalan Kashanee of Panjgoor. His father Meer Muheem was such a tyrant, that he was styled the Nadir of Mukrán, and was said never to have been able to eat any thing that was not stolen. There is another cub of the old wolf alive,

Fort. called Kadar Buksh. The fort of Koohag is 130 yards in circumference, and 80 yards high, and with walls 2 *guz* thick.

The fort is full inside to half the height of the walls, and Baman Baman. has one gate to the East. On the West are the remains of an old mining gallery driven by the Persians, not with the intention, as might be supposed, of blowing up a bastion, but of getting at the well inside, and then preventing the garrison drawing water, and this according to the ideas of a Baloch, is the only use of a mine.

The Shahghásee of Mehrab Khan once besieging Koohaghut, was after a time obliged to return to Panjgoor on forage failing. The fort stands on *Kurk*, which may be sand there, and not loam. I staid

Kurk. four days at Koohag, and on the fifth, 18th November, started and proceeded in W. N. W. direction over a tolerable road, with water on it 8 kos to the Kowr-i-Mashhed; another road to Julh is via Kuwarbastan, a small village to the N. W. Kour-i-mush-hed. of Koohag, situated at the foot of the Sujahan mountain.

At this stage there are no habitations, but plenty of fodder for camels, and firewood.

19th November.—Proceeded over a good road in a W. N. W. direction 8 kos to Ispandak, which belongs to Meer Jahangeer Ispandak. Khan Nowsherwanee, uncle of Meer Asad Khan of Kharan; the place is pleasantly situated, and is well cultivated, consisting of about 100 huts. I here exchanged $\frac{1}{2}$ lb of black pepper for 2 large fowls, for having which large quantity with me, they conferred on me the title of Mulla Pepper. Luckily the chief was absent on a foray, but notwithstanding this, the people managed during the night to steal a donkey of mine. I intended to await the return of the Meer, in hopes of recovering Mr. Long-ears; but the Mulla of the mosque I spent the night in, told me, I might think myself fortunate in getting the Short-ears, or camels, with their loads safe out of the place, which he advised me leaving immediately, and for which advice may his store increase.

20th November.—Proceeded 5 kos in a N. N. W. direction over a level road to Dehag, and then 5 kos due North over a difficult road to Kallagan, which is a pretty place, but infested by a set of very inquisitive and troublesome people, who levy a tax of 2 seers of grain on every camel load of merchandize. I had an attack of fever at night, and next morning when preparing to start, was stopped by a man, who was desirous of purchasing some of the madder I had with me; I concluded a bargain with him, 2 Co's. maunds for 2 ducats, while at the same time he had managed in examining the goods to extract a skull cap, without my noticing him. I this day also did a little business with the ladies, bartering needles for eggs, at the rate of one of the former for two of the latter, and at night gave my hostess, the Mulla of the mosque's wife, some rice and meat to cook for me, which she succeeded in boiling down to just one-half, no doubt, good lady, with the best motives, and from a regard for my health, as well as in consideration of my fever.

22d November.—Proceeded 7 kos in a due North direction, which was a level road, part in a rivulet bed and part over a plain to Jalk a collection of 9 small forts or towers, surrounded with cultivation, among which the fine *papo* date is conspicuous. The chief of this place is Maddat Khan, who declares himself by descent a Kuresh Seyud. The principal fort, which was once of some consequence, was destroyed by a detachment of Nadir Shah's army. It has a ditch, and is 900 yards in circumference, its walls being 40 guz in height. After the time of Nadir Shah, this place paid a tribute of 600 rupees to Candahar; but they have now no head even among themselves, who can enforce tribute of the 600 rupees. Jalk or Jalak, which literally means "desolated," paid 400, and Kallagan 200 rupees. At this place are now to be seen traces of a Persian garrison, there being outside the fort several domes ornamented with glass enamelling worked into figures.

The principal men next to Maddat Khan, are Rais Janbeg, Rais Jonoo, and Rais Bhaicean; these men would have no hesitation in inviting Meer Gajeean of Dezak to Jalk, should Maddat Khan attempt to assess them; indeed they have already as a check, put his brother Alam Khan in possession of one of the small forts of

Jalk. The brother of Maddat Khan, Dilawar Khan, holds a fort of his own, called Kohen Kalát.

One of the forts belongs to Meer Sulla Husarzi Regee, who is said to be able to collect 1,000 men; he is at enmity with the Mahommud Sonnee Brahoees.

Jalk is bounded on the East by the dry lands of Mashhed, and on the other sides by hills.

From Jalk to the shrine of Peer Kaisar is a 6 days' journey for laden camels, and from thence to Seishtan is 6 more over a sandy desert.

I remained 6 days at Jalk, when I disposed of some mushroo, and on the 7th day, being the 29th November, started and proceeding in a due West direction over a tolerable road 5 kos, arrived at Singan, a small fort belonging to Kamal Khan Regee, a great thief, but a good host; the place is well cultivated by a running stream, and supplies are plentiful.

30th November.—Eight kos in a due West direction over a good road Nahoo. brought me to Nahoo, a small village, well supplied with water, provisions and firewood, which latter I found very necessary, as the place and weather were very cold. I put up in the mosque, and was soon surrounded by questioners, who expressed their surprise at seeing a person in my apparent circumstances proceeding on a pilgrimage, as the generality of pilgrims begged their way. I explained to them, that according to our law, the pilgrimage was only ordained for persons in easy circumstances. They then seemed astonished at my having come this road, as the road thence to the south was a very difficult one, over which horsemen were obliged to lead their horses, and which Mulla Haroon, the great saint of Dezak, of whom I shall hereafter have occasion to speak, had named Peel Sarat, on account of its narrowness. They also mentioned a road to the West on which 3 kos from Nahoo was a mountain Pass, or *jak*, called Jak-i-Lukman, from the philosopher of that name, who cut the road out of the mountain. To the north of Nahoo is a mountain called Sufed Koh, in which the natives believe gold and silver to exist, and on which they say in the spring is a bush which at night from a distance appears on fire, but on approaching it, the delusion vanishes. I wanted very much to visit the Jak-i-Lukman, as I fancied it might

bear some mark of Alexander the Great, but snow fell at night, and made me abandon the project. From Nahoo across the Jak-i-Lukman to Gwasht is 10 kos, a place of 80 houses, well cultivated, and inhabited by people who call themselves Kuresh, and where there is said to be a slab with inscription on it. Thence 10 kos over a difficult mountainous road to a stage in the hills without habitations, and from that 8 kos to Gwasth, the first village in the Surhad district, over an easy road, infested by thieves of the Domanee and Bambaree tribes.

3rd December.—Left Nahoo, and proceeded due South across the Peel-i-Surut, a very narrow and extremely difficult Pass, there being springs both at the North and South side of the mountain 10 kos to Dezak. the village of Mulla Haroon in the district of Dezak, in which are situated seven villages; viz. Shash-toonk, Tarjae, Reyyon, Mulla Ahmed, Meer Gajion; and the village of Mulla Haroon, which is the largest in Dezak.

To the West of Dezak is Panjgoor, and to the South a mountain, **Boundaries.** beyond which is Sib; to the North is the mountain of Puli-Surtat, which is the same as that of Sirjahan; which beyond Dezak, turns to the North towards Southern.

The district is a fertile one, watered by *karez*, and the cotton produced here is famous throughout Mukrán; it is of two **Brown Cotton.** kinds, white and light brown.

The chief of the district is Meer Gajian, who claims descent from **Chief.** Shah Nyamutulla-i-Walee, his retainers are Domanees, and he is very popular in the district. When Abul Kasam invaded the

country in Futteh Ali Shah's time, he levied 5 rupees on each Hanjan, or water-right of a day and night. Meer Gajian assesses the lands at $\frac{1}{10}$ th of the produce, and of the date produce he realises about 150 Company's maunds, besides 250 maunds of juwaree, and 150 maunds of cotton. The principal men of Dezak, besides Mulla Haroon **Principal Men.** and Meer Gajian, are Khaleel Khan, Meer Rusheed, Meer Ameen Noorulla, and Mulla Ahmed.

The forts of Dezak are like those of Balochistan, of little consequence. There are at least 1,000 cotton weavers at this place, and the fabrics are exported in all directions; while wool, goats' hair, ghee and asafoetida are imported from Jushad. There are 100 Hindoo traders here, the principal of whom is an agent of Magon

Bhatya, of the port of Gwadur, who trades with a capital of 3,000 rupees. The mass of the inhabitants of Dezak are either weavers or small traders. From Dezak to Surbad is a 6 days' journey for laden camels, over a good road. A tax is levied of two Company's seers per load on merchandize, unless the merchant puts up with Mulla Haroon, when he is exempted.

The animals of Dezak are the same as those of Panjgoor, and so are the fruits and birds of the latter. The *konk*, partridge, however is more plentiful. I saw two cypress trees at Dezak and one at Kahoo; they are not to be seen at Panjgoor. The Dezakees build with the date's stem, and use it as well as the *kanboon*, as firewood.

On arriving at Dezak, I proceeded direct to the village of Mulla Haroon, and introduced myself as a merchant from Panjgoor, who was desirous of becoming a disciple. The saint himself soon made his appearance, and at the first glance I recognised him as one of those "*man poachers*," so common in Arabia, Persia, and Hindusthan. He appointed the second day for my initiation, and explained to his disciples, that I had seen a vision of him while in Hindusthan, and had then believed on him. I of course corroborated his statement. On reaching my lodgings, I found an entertainment awaiting me, which consisted of some bread and a mess of pottage, called

peegash, the receipt for making it is as follows. To one ounce of sheep tail fat, add a gallon of water; boil and throw in $\frac{1}{4}$ th of bruised pomegranate seeds, $\frac{1}{2}$ a handful of flour and a little turmeric, and when this soup is on the groaning board before you in bowls, you may contemplate the little globules of fat floating on the surface, and compare them to eight stars in the azure firmament.

On the day appointed for the initiation, I repaired to the *akhund's* house, who after receiving me kindly, enquired whether I had performed my ablutions. In the fear of being ordered to do so in cold water, I replied in the affirmative. He then sat himself on the ground, and ordered me to do the same immediately in front of him; spreading over my head and his own a thick quilt, he ordered me to sink my head on my chest, and shutting my eyes, to look with my inward eyes into my heart, and repeat aloud the name

of God. This I continued to do for a full hour and a half, until my neck was nearly broken, and until I was completely exhausted from profuse perspiration, my confessor during this time being silent, and buried, I strongly suspected in sound sleep; at last awaking and perceiving my uneasiness, he removed the quilt, and telling me to hold my head up, asked what I had seen! I replied he knew as well as I did, and that it was not proper to reveal my stories; he smiled and said, he had great hopes of my becoming an adept. As I had taken with me a ducat, some sugar, and a piece of muslin for the saint, instead of *peegash*, I that evening received an entertainment of coarse rice. The old gentleman whose neck has absolutely grown stiff in the position he constantly keeps it in, was very anxious to see that the Dezakees did not impose on me, or cheat me in purchasing my madder, and offered to become my broker. I apologized and said, I could not trouble him with my worldly concerns, and that I would only do so with regard to my spiritual affairs; the truth is, I was afraid of his taking a fancy to sundry articles among my goods. I sold my madder at the rate of 10 Dezak maunds the ducat, and discharged the two matchlockmen I had brought with me from Panjgoor, giving them as part of their hire, one of my camels, which had suffered much from the cold. On taking leave of the *Peer*, he gave me a letter to Meer Mahommed Shah of Sib, and tied his own turban round my head. I remained 12 days at Dezak, having during this time despatched my manuscripts, for fear of accidents, to Gwadar on the 18th.

16th December.—Started and proceeded due South across a mountain Pass extending for 4 kos, the first and last 5 kos of which are over a good road. This mountain can be turned both to the East and West, and a good road thus procured the whole way. Sib is bounded on the

Sib. East by Dehsk; on the West by Pas-i-Kok, inhabited by Bar-

hanzais and Badowzais, which latter are originally of the tribe of the Seer of Sheeraz, who emigrated from that place in pursuit of the Koords of Sarhad, with whom they had a blood feud, and who owe them a blood debt; on the North by the detached mountains; on the South by a mountain, on the other side of which are the villages of Afshan and Erisband.

The village of Sib is a small one, and has only been raised into importance by the forays of its chief, Mahommed Shah, son of Shah

Saffer, who claims descent from the house of Saffareea. Next

Chief. in importance to him are Balooch Abder Ruman and Ba-
leeat. The cultivation of Sib is confined, and there are a few date
trees. The chief has two sons, Nadir Shah and Taimoor Shah. The
following are the places, tribes, chiefs and numbers that owe allegiance
to him:—

	<i>Place.</i>	<i>Tribe.</i>	<i>Headmen.</i>	<i>Matchlockmen.</i>
	Gwasht,	Kuresh,	Mulla Mahomed,	100
	Erifshan,	Erifshanees,	Kadar Buksh,	200
Force.	Molatan,	Molatanees,	Mulla Meer,	400
	Deban,	Debanees,	Badeen,	100
	Pasi-Koh,	Burhanzais,	Khuda Buksh,	200
	Sohran,	Sohranees,	Baice-on,	200

Mahommed Shah is held in great dread throughout Mukrán,
Forays. and he has even carried his forays into the district of
Ketch. He collects no revenue from Sib itself, which is nearly all

Revenue. his own hereditary estate. His revenue may amount to

5,000 maunds at 25 Company's maunds of grain,* 200
packages of dates, 125 maunds of juwaree, 80 maunds of cotton, 5,000
Mahommadee rupees of which gold and ducat,† and 1,000 sheep, and
2½ maunds of ghee. Besides these regular incomes, he forays to an ex-
tent, bringing home camels and prisoners, male and female, whom he
sells for slaves. The fort of Sib is 450 yards in circumference, built on
stony ground, and the citadel is an inner fort 120 yards; the height of

Paseel. the outer fort or *paseel* walls 8 *guz*, that of the *meeree*
walls 25 *guz*. The *meeree* is full to half the height of the
walls, the thickness of the remaining part of which may be ½ *guz*.

The people of Sib burn the *baranshok* grass, with which when
green, they feed their horses and asses, &c.

On arriving at this place, Mahommed Shah was absent at Panjgoor,

Reception. on a visit to his son-in-law Mahommed Aly Khan. His

lady, a sister of Meer Maladad Gichkee of Panjgoor, whom
my father administered a charm to, when suffering from the small
pox, sent her nurse to me in the *mehman khana*, to apologise for her
not coming herself, as 40 days had not yet elapsed since her delivery.

* Sic. in orig.—Eds.

† Sic. in orig.—Eds.

Next day I entered myself, taking with me a piece of jamdane and one of mashroo for her son, as well as a little *henna*, a few raisins and apricot kernels, for which in the evening I received a sheep roasted whole, which was a very acceptable change from the *peegash*, and penance of Mulla Haroon, especially to the few poor *Hajees* who accompanied me from Dezak. On the sixth day after my arrival, I expressed a desire to be going, but my kind hostess, who had entertained us every day, pressed me to stay, as Mahommed Shah was hourly expected, and would no doubt give me a horse or camel. I feigned great indignation in being offered any thing unlawful, such as stolen property, and asked her how she could expect me to accept such, knowing I had lately become a disciple of Moolla Haroon, and was not then two stages removed from the scene of my initiation. On this she presented me with a *kesh* of brown cotton grown on the family estate. In the afternoon, Meer Mahommed Shah arrived with 30 horsemen from

Intercourse with
the Chief. Panjgoor, dressed as a Persian, black sheep skin cap, wide trowsers, and tight sleeves. As this chief, next to Azad Khan of Kharan, is of the greatest note in Mukrán, I intend dwelling at length on my intercourse with him.

In about an hour after his arrival, he called to see me in the mosque, and enquired the news from Panjgoor which I gave him, and informing him, that I intended proceeding to Bampoor. He strongly advised Feroz Meerza. me to desist, at least to delay my departure, as Feroz Meerza, brother of Mahomad Shah, was expected from Narmeeas to invade the former place. To the delay I expressed myself inclined, as I should then have the pleasure perhaps of fighting the infidel Persians in his company, but in the mean time I expressed my intention of visiting Sarhad, and then proceeding to Bampoor. He asked me if it was true, that in Bombay there were fire-arms that were used without flint, priming or match, and on my assuring him of the fact, he commissioned a pair of pistols of the same kind, which I was not to forget to bring with me the next time I returned from Bombay. He also expressed his admiration of a small straight English sword, with a new scabbard that I had with me, and was much pleased with a few ball cartridges that I gave him. He asked me a great deal about British prowess by sea and land, their administration of justice, and their feelings towards Mahomedans and their own religious insti-

tutions, all of which questions I answered fully and to his satisfaction, as well as to that of several bye-standers, who immediately proposed taking service. They had heard of the occupation of the Island of Khaig (Karrack) by the English, and wanted to know why they did not come to Bumpoor, and from thence invade Kirman, as they themselves would be happy to enlist and join the expedition for a pecuniary consideration, and begged me to tell the officers at Karrack so.

23d December.—Having procured a guide from Mahommed Shah, I left Sib, and proceeded 8 kos over a good level road in a N. W. direction to Dolegeaban, a place containing a few goat-hair tents of Balooches and one well, where already, a shower of rain fell, and the weather was very cold.

24th December.—Proceeding 5 kos in the same direction over a good road, arrived at Pas-i-Koh, where I was lodged and entertained by one Bejad, who had heard of the kind treatment I had received from Mahommed Shah of Sib. These people do not at all bear resemblance to Balooches, as they say themselves, they are originally from Shiraz.

25th December.—Proceeded in a N. W. direction 10 kos over a good level road to a few huts of Damanees or skirter, (*daman*, meaning skirt of a hill.) This night rain fell heavily, and afterwards snow, which latter with cold piercing wind killed my camel.

26th December.—Proceeded still in the same direction 8 kos over a good road, sometimes on foot and sometimes mounted on a bullock that I had hired for 2 rupees from three miserable tents of Balooches, the inmates of which seemed hardly to have the wherewithal to subsist on, and yet they immediately put their pot on the fire, and commenced boiling a few handful of flour for me; this I declined partaking of, pleading their extreme poverty as an excuse, but really not feeling inclined to paste my inward man. They then advised me not to go to Turbad where there were thieves, who would certainly annoy me; if for nothing else, yet merely for my being a Sunnee.

27th December.—Travelled in a N. W. direction over a level road 6 kos to the village of Gwash, the first and principal one in the district of Sarbad, which is bounded on the East by Gwash; on the West by Varmasheel; on the North by the village of

Zameen and Koh-i-Diptan ; and on the South, by the Damin Erindagan and Koh-i-Beer.

The names of the villages of the district are, Zamin, Zamindan, Wafabud, Zyadatee, Khoon-i-kaka, and Nagul, and on the other side of Koh-i-Diptan, is a village called Sadoz, which is on the road to Hafsadrah ; the districts are well cultivated and watered.

The chief of Sarbad is Maddat Khan, Koord, originally from Persia, and his dependents consist of Persians, Damanees and Bambarees. He collects $\frac{1}{5}$ th of the produce of the district, which may amount to 2,500 Company's maunds a-year, of wheat and barley, of which they reap two crops, besides presents of sheep and ghee.

There are no forts in the district, of any importance, the one of Gwash being 200 paces in circumference, and 6 guz high.

I was informed that on one of the sides of the mountain of Diptan, at a great height, was an artificial recess, containing two large Diptan. vases, which they had on several occasions tried to reach, but without success, by fastening date stems one on the other. There is also, they informed me, at the bottom of the same mountain a stone, on which is an inscription which has never yet been decyphered by the natives of the district, or by strangers. They moreover assert, that silver is to be found there, and that a Loree goldsmith was in the habit of paying yearly visits to the place, making a present of several ducats to the chief of Sarbad for permission to visit the mountain ; but on account of Maddut Khan's father once robbing him, he had never returned. I wanted very much to see these wonders, but was prevented by the snow.

Maddut Khan encourages forays, and exacts $\frac{1}{5}$ th of the plunder. They are not much at the Hefladrah, and sell their booty, which is sometimes valuable, consisting of Persian silks and Cashmere pashmeena, for a mere trifle in Sarbad and Dezak, on their return.

From Sarbad to Regan, the following are the stages : Kalag, Asaroo, Rodi Mahn, and Desert Regan, over a very difficult road.

The following are the animals of Sarbad, in the order of their multiplicity : goats, sheep, camels, asses, horses, cattle, wild Animals. asses, wild goats said to furnish musk, wolves, jackals, foxes, tigers. Leopards are also found in the hills.

There is not a date to be seen, the fruits being pomegranates, wal-
 Fruits. nuts, apples, peaches, mulberries, apricots, almonds, Khujak
 pears. The inhabitants build very little; when they do,
 they generally use mulberry wood.

In the mountain of Beer, a great quantity of cardamums is pro-
 duced, and about 20 camel loads are yearly gathered.
 Productions. In the Diptan mountain are produced sulphur, sala-
 moniac, and at the foot of the same mountain is a hot spring;
 asafoetida is also plentifully produced. As the inhabitants of Sar-
 bad are all thieves, as might be expected, there are no weavers or
 resident traders, but at harvest-time Hindoos come from Dezak with
 lead and saltpetre, which they exchange for ghee, wool, cardamums
 and asafoetida, for transportation to the port of Gwadar. I spent three
 days at Sarbad, during which I did not venture to visit Maddut
 Khan.

31st December.—Started, and proceeded 8 kos over a good road to a
 few tents of Damanees, where I reluctantly put up for the night; to-
 wardse vening after having dined, I requested a place in the tent, as the
 weather was very cold, which was refused me. I afterwards overheard
 them making conjectures as to my wealth, which they all agreed must
 be true, as I lived in what to them appeared a most extravagant style,
 eating rice and ghee. They moreover learnt from my guide, that I had
 been talking a great deal at Sarbad of mines and metals, and that I

Alchymist. must therefore, for both these reasons, be an alchymist. In
 fact they determined on stealing my *khoorjeen* or saddle
 bags during the night; watching was useless, as it would only increase
 their suspicions, in fact confirm them. I therefore had recourse to a lit-

Conjuring. tle conjuring that I had learnt in Hindusthan; first I cook-
 ed some dates and sprinkled a little tincture of bhang on
 those intended to be distributed to my hosts. I then ignited three
 pieces of camphor and set them floating in a basin, and having washed
 my mouth well with akrkorah root and sal ammoniac, I held a bit of
 ignited charcoal in it, jumping about and pretending to utter incanta-
 tions; afterwards beginning to get tired, I gave instructions aloud in
 Beloochee to what my host supposed were two attendant sprites to take
 care of my saddle-bags during the night, and blind and lame any
 one that attempted to lay hands on them. My host began now to get

really alarmed, and made most abject apologies for not having given Effect. me a place in the tent before; I took advantage of this impression, and insisted on their *champooing* me until I fell asleep. The next morning on getting up, my hosts complained of a head-ache, not being aware that they were intoxicated, and begged me for God's sake to blow on their temples. I called for some butter-milk, and writing on a slip of paper what they thought was a charm, immersed it, and ordered them to drink it off. After a short time they of course felt cooled and refreshed, and brought me a sheep as a present, and insisted my being their guest for that night also.

2nd January, 1839.—After being stopped by my hosts to pray for them I set out, and proceeding over a good road 8 kos, arrived at the village of Erindagan, where I no sooner had arrived than Erindagan. I was surrounded by a host of applicants for charms, for which they paid liberally in fowls, rice, &c. &c.

I here felt diminution in the severity of the cold. As I was proceeding next day on my journey, I was stopt by a man who entreated me first to cast a devil out of his wife. The lady it appeared to me was merely trying the extent of her lord's affection, and intended to judge of it by the degree of solicitude (evinced for her recovery.) Fainting and hysterics not being the fashion in Beloochistan, the ladies are obliged to have recourse to devils. I immediately caused her to be held down, and lighting a charm rolled up in rags, held it under her nose until she fairly repented of her experiment, and until I had impressed the spectator with a proper sense of my miraculous powers. I must give the lady great credit, however, for the zest with which she kept up the farce, speaking all the time as the devil within her, and at last swearing by king Solomon, whom the natives suppose to have been omnipotent over gins and evil spirits, that he (the devil) would never again enter into the woman. I was so pestered during the day for charms, that I determined on dropping a little of the *Peerzada*.

Erindagan contains about 50 huts, and the cultivation of wheat, Cultivation. rice, barley, and juwaree is comparatively extensive.

4th January.—Proceeded 10 kos over a difficult and sometimes hilly Apta. road to Apta, a place well cultivated from running water, containing 200 huts and groves of dates, and furnishing provisions in plenty. The chief is Hussun Khan.

Leaving Apta, I set off to the East to visit the fort of Mugas, the strength of which I had heard much extolled. Having dressed or rather undressed as a *fuqeer*. I spent this night in a *kour* or rivulet bed, and starting the next day, still proceeded in the *kour* to a few tents of Beloochees, who on my entry hastened to set before me all they had; viz. coarse juwaree bread and fresh asafoetida.

6th January.—Having travelled 5 kos, arrived at Mugas, the famous. I found a square tower 30 *guz* in height and sixty paces in circumference. I was assured, however, that Abul Kasam Khan had besieged this tower, but found his guns would take no effect on it, it being *baman* for 20 *guz*. I here saw two of the finest horses I had ever met with in Beloochistan, they belonged to the chief, who is a Koord. I had taken the precaution of bringing a few needles with me, and could with the greatest difficulty obtain flour for them, the natives wanting them for love.

8th January.—Hiring a bullock to take me as far as Pahro for one Companion. rupee, I started in company with two Magases, and travelled till the afternoon in the same rivulet bed that I had come by, and stopping, commenced cooking coarse bread. My companions regarded my preparation with longing eyes, at last not being able to contain themselves, requested to be invited to my table. I expressed my surprise at their not having brought bread with them, as this was the first stage from their homes. They assured that they never tasted bread beyond once a week or twice at most, living entirely on dates. On going to sleep, I put some of the remaining bread under my pillow. The temptation to treat themselves was too great, and they stole it during the night, assuring me when I awoke, that the thief must have been a Tolak jackall.

9th January.—After a journey of 6 kos returned to Apta, once rather a good road the whole way, and purchased an ass, which animals are procurable very fine here, having an excellent quick amble; every one, high and low, rides them.

11th January.—Proceeding 8 kos over a good level road to Pahiah, where I found supplies plentiful; the chief is Ibrahim Khan.

12th January.—Ten kos further over a level road without water, through a jungle of *kanhoor* and tamarisk, brought me to Bampoor,

the direction being sometimes W. N. W., and sometimes due west.

This district is bounded on the East by Pahiah; on the West by Bampoor. Miskaton; on the N. N. W. by the hills of Bazman; and on the South by Sashar.

The following were formerly the feudal dependencies of Bampoor: Dependencies. Pabrah, Apsor, Bazman, Ispaka, Sashar, Miskotan, Brindogan and Damind. The district is a flat and very fertile one, producing wheat, barley and juwaree, and being watered from no less than 96 small canals, the harvest of Kolwa equals this—the seed of Bampoor, and the harvest of the latter place, only equals the seed of Narniasher. The land is allowed to be fallow for about two years, not so much on account of the pooriness of the soil, as on account Cultivation. of the extent of the land, and comparative scarcity of cultivation. Both sugar-cane and indigo might, it appeared to me, be Chief. introduced with great advantage. The chief of Bampoor is Mahommed Ally Khan, son of Mehrab Khan-i-Lung, or the lame, by tribe a Narsee, from Nare, their original district, which is situated towards Seisthan. He has a force constantly kept up of 500 men of his own tribe, and 80 slaves of his own purchasing.

He collects his revenue at the rate of 300 Bampoor maunds per Land tax. *gooband*, a space of land which takes 400 Bampoor maunds to sow.

I estimated that each small canal watered 6 *goobands*, and that Principal Men. the Bampoor maund equalled the Company's seer. The chiefs of Mahommed Ally's own tribe had lately quarrelled with him, and had gone over to Prince Temz Mirza, to invite him to invade Bampoor. The principal men are, Siparsala, Meer Gazhee, son of Kamhae Zaburdust Navee. The allies of Mahom- Allies. med Ally, or Mahommed Shah of Sib, are his father-in-law, Maddut Khan of Sarhad, Husen Khan of Aptar, Ibrahim Khan of Pahiah, and Muheem Khan of Miskotan. His enemies are Sar- Enemies. feras Khan of Gik, Ghulam Khan of Sashar, Deen Mahommed of Kaseband, Imcheem Khan of Ispaka, and the Raises of Oodeean, who are his mother's brothers. Of the ninety-six canals, eight are cultivated by the chief himself, and the rest by his tribe; from each cultivator, of which, at the harvest time, he requires

thirty Bampoor maunds of flour, one sheep and three maunds of ghee. Deputy. When Mahommed Ally is absent from Bampoor, one of his slaves and Meer Gazhee act for him.

The fort of Bampoor is on an eminence, it is of mud, and the suburb walls, which are insignificant, and those of the citadel, 140 paces. Fort. The height of the latter wall is 15 *guz* and their thickness $\frac{1}{2}$ *guz*. The citadel is full of loop-holes. There are three small dismounted guns. There is also a sally-port to the West, while the principal gate of the fort is to the East. There are three wells, one without the suburbs, another near the mosque at the S. E. angle of the fort, and a third also in the suburbs, and a fourth in the citadel, the water of which is brackish.

From Bampoor to Gik is 40 *kos*, to Kassurkund and Ramiskh 6 days' journey, to Sashu 2 days. There is a gun road, I was Road. told, direct to Nurmashee, as follows: 1st stage, Chah-i-Besahib; 2nd, Chah-i-Talazore; jackal well; or 3rd Chah-i-Shor, or brackish well; 4th Warzeen; 5th Giranreg; 6th Ah-goum; 7th Narinasher.

The animals of Bampoor are, first in number and consequence; asses, horses, camels, cattle, wool-goats, and sheep.

The inhabitants build with date stem, and burn the jungle trees and bark. The produce of the district consists of wheat, barley, beans, ghee, wool, juwaree and dates in small quantity, of which the ghee and wool are exported to the port of Chouhar, and the grain to Mukrán, where this year it was sold for treble its cost.

There are 5 weavers, 2 shoemakers, 10 blacksmiths, and 3 carpenters, but no traders, with the exception of one Hindoo, who is the Khan's store-keeper, and trades with about 2,000 rupees on his own account. There were formerly no less than 25 merchants here.

The cost of bringing merchandize from Chouhar to Bampoor is 10 rupees the candy, and no taxes are levied.

There are no measures, nor hardly can there be said to be a money Currency. currency; the maund equals our Company's seer, and the medium of value is either slaves or copper from Kirman and not from Bombay, or grain. The Seetarammee ducat is valued at eight nominal rupees, and Company's seer of copper at 4 rupees. When rupees are found, they are of the coinage called Riali Futteh Aly Shaha.

When a merchant for instance brings Bombay goods from Chouhar, he bargains in rupees, and then the purchaser asks him what he will have his rupees in, wool or ghee, and accordingly he receives the article he wishes at the rate of the Bampoor market for the time. The merchants of Dezak on the other hand, receive for their cloths, copper and slaves, which are not stolen, but are the trophies of mid-day forays in the confines of Kirman, and those brought from the neighbouring Belooch districts, who may at any time refuse to acknowledge the Khan. The merchants of Mukrán again, for their cloths and ducats, receive grain.

On arriving at Bampoor, I put up in the mosque in the town with several poor *Hajees* who had accompanied me from Dezak. In the evening, according to the custom of the Khan, bread was brought for us. As I wanted to form the acquaintance of the Khan under favourable circumstances, I resolved on shewing eccentricities; and accordingly returned my share of the dinner, saying, I made it a point never to eat the bread of extortioners and rulers.

The next day Mahammed Ally held a court without the town, and ordered musicians to be present; when seated and in the midst of his entertainment, he despatched a slave of his by name Zaburdust, to invite me. I refused to go, saying, that I was a disciple of Mulla Haroon, and had vowed never to listen to profane music. This had the desired effect, the Khan's curiosity was excited to the highest pitch, and in a quarter of an hour he alighted at the

mosque to pay me a visit in person. After salutations and compliments had passed, he said, he supposed I gained no object in visiting him, I therefore had refused to come; whereas he had objects to gain, and had therefore come to see me. I expressed my anxiety to know those objects. First, and he in reply "God had blessed me

with no more beard than what is composed of the few scattered hairs you yourself perceive on my chin, and I am really ashamed to show myself in public. I want some specific to make a good beard grow; secondly, according to my predestination, I have been blessed with five wives, and live on good terms with them all, but hitherto has been impossible for me* — as you have seen a good deal

* Sic in MS.—Eds.

of the world, and must know much of human nature, pray give me the result of your experience of womankind."

The Khan seemed pleased with my company, and told the other *Hajees*, that they might resume their journey, as he intended to make me stay with him. He then took me into the fort, and lodged and entertained me for several days. During which time he spoke much of the expected advance of the Persians, and showed me his preparations, which consisted of flooding a few yards of ditch in front of the gate. On my rashly suggesting the propriety of mounting his guns on carriages, he immediately insisted on my taking charge of the ordnance department, and becoming his Commandant of Artillery. I had thus completely committed myself, and saw a great prospect of my being prevented prosecuting my tour if I did not succeed in starting immediately. I therefore expressed my intention of setting out for Dangers of Route. Oodeean. To this he strongly objected, as the country

was very unquiet on account of the rumoured invasion of the Sheeahs of Oodeean, who would certainly take me for a Belooch and seize and sell me accordingly. I therefore pretended, that after receiving his advice, I had changed my plans and now intended proceeding to Sásár. I here parted with some of my mushroo to the wife of Mahomed Ally, for which with the greatest difficulty she paid me partly in rupees that she had sent for all the way from Kirman to make a few ornaments for herself of, and partly in old silver ornaments, which a goldsmith was sent for to remove from the handle of a family battle axe.

I purchased a camel here for seven ducats, and proceeded to take leave of the Khan, who first forced me on riding a donkey, and made me promise to send him the beard preparation by the first opportunity. I had previously pleaded my inexperienced youth and religious habits as an excuse for not taking upon myself to speak

Capt. Grant. on subjects relating to the fair sex. While at Bampoor, the people often spoke of a gentleman who had come there in the time of Mehrab Khan-i-Lung, and purchased horses which he had paid for at Chouhar. He travelled with trunks and tents, took notes of the country, and was very fond of walking in the fields. They called him *Gurand Sahib*, (Capt. Grant,) and said he had been well treated during his stay, and also, that for two or three years after his departure, the people of Bampoor much dreaded an invasion.

24th January.—Leaving Bampoor, travelled in a N. N. W. direction over a level sandy road, through a walk to a pool of water, the inhabitants of the neighbourhood of which had fled from their homes.

25th January.—Travelled a level road with a few ascents and descents in a N. N. W. direction for 8 kos, when I arrived at Bazman. On approaching the fort, I was called to from the walls, and asked who I was; I replied “a *Hajee* ;” then said they, “you had better get some other place, as if you come in here, you will be seized with us.” I put up for the night outside the fort, and only succeeded in ascertaining that Bazman is bounded on the East by Erindagan; on the West by a high mountain; on the North by Rodimajer; and on the South by Miskotan. The chief is Shahbaz Khan, Chief. by tribe a Koord. Mahommed Ally of Bampoor had sent ammunition to the above chief, with which to hold out his fort, which is a small one, against the Persians. In the neighbouring mountain I was informed, that sulphur was to be found.

26th January.—Left Bazman, having procured a guide as far as Oodecan, and travelled all night over a desert waste for 10 kos, where I stopped, having no one with me but one servant, and the guide, which on arriving, went for water to some distance, the position of which I did not see.

27th January.—Travelled all night over the waste through a drizzling rain, and towards morning encountered a body of 13 men mounted on horses and camels, who challenged me, and on my informing them that I was a *Hajee*, they gave me the lie, and declared I must be a Persian spy as I travelled by night; my denying the charge with oaths was of no avail. I was ordered to lay down my arms on pain of receiving the contents of all their matchlocks; my servant threw down his gun, and the guide ran away.

The men immediately secured and obliged me to accompany the Capture. party till the morning was far advanced, when they halted and bound us; having searched my person, and secured some gold that I had brought with me from Dezak, they retired to a short distance and divided the spoil, consisting besides the gold, of the asses and their loads. Leaving us bound they then separated; seven taking the road to Bazman and Giranrey, and six that to the Bampoor waste. After remaining bound for some time, two men mounted on asses, seeming to

have come from the Bampoor waste, made their appearance, one of them took possession of my companion's nephew of Baloch of Dezak, and returned with him towards Bampoor, while the other insisted on my preceding him bound, on foot. This I did until my feet were blistered, and I began to limp, my captor urging me to go faster, and

telling me, that as nothing had fallen to his share but the Separation.

English sword, he intended selling me, and shortly afterwards giving me a push, the brute precipitated me with my hands tied behind me on my face among the stones. On recovering, I sat

Attempt at ecclai-
rissement.

doggedly down and invited him to despatch me. At this proposal he laughed, and said, that he would do nothing but sell me, as many better men than me of his tribe had been sold by Belooches. I denied being a Baloch, and explained to him that I was an Affghan, at this he appeared delighted, and said "so

Matters made worse.

much the better; that scoundrel Futteh Khan of Punoch is of your tribe and a *Sunnee*, who sells so many of us, saying it is lawful to rob an infidel *Sheeah*, and now thank God, I have got hold of an infidel *Sunnee* in return, with whose price I have no doubt I shall prosper." He, however, dismounted and put me on the ass, and we proceeded in this manner not at all in one direction until sunset, when we arrived at his encampment, which I learnt was in the district of Rodbar. By this time I was fairly exhausted with pain and thirst; conducting me into the tents, he introduced me to his mother as a lazy knave, who could not walk a mile, telling her, that he had got nothing of the spoil but my worthless carcase, every thing of value having been carried off by the *Dashters*.

The good woman seeing my beard besmeared with blood, was moved with compassion, and upbraided her son for his ill treatment of me, reminding him, that I had no doubt "a mother," and requested him to anoint my feet with ghee; this he did with a very ill grace, reminding her all the time, that the man who killed his uncle was one of us Affghans. The next morning on awaking, my beard was so clotted with blood from the wound on my

Shave.

chin, that I had recourse to a pair of scissors, and made myself as smooth as my friend Mahommed Ally of Bampoor. I was confined to my bed sometime from fever, during which time several offers were made for me. One man offered a lean camel, while

another offered three asses ; but my master would take no less than two

Purchasers. camels, at last they were offered, but fortunately for me

my master changed his mind, declaring he would be able to get a good horse for me at Marmasher. This happened about the beginning of the month Mohurru. A few days afterwards, a man arrived at the encampment, and gave out that the Persian friends under the prince had actually made a move, having according to their custom on setting out on an expedition, sacrificed a camel, and that Mirza Ally Raza of Kirman had arrived at Jeeraft to lay in supplies.

I was delighted to hear this news, as I was acquainted with the Meerza while in Persia, and I had hopes of being able to escape to the Persian camp, should it enter Beloochistan.

The new comer then looking at me, and seeing my plight, advised my master to release me, as "God knows," said he, "how soon you yourself may be a Persian slave ;" which advice was not at all well received, and my would-be benefactor got nothing but abuse, which proved however most fortunate for me. For stung with the insult, he

Friendly meant. took the first opportunity when I was not collecting

wood to suggest my escape, promising he would effect it for ten ducats ; to this I immediately and gladly agreed, notwithstanding I had my misgivings that he might sell me somewhere else. He appointed the second night for the attempt, and showed me a tree under which he would have a camel ready at dusk. On the day appointed, my master intended to have decamped for fear of the Persians, but it being the tenth of the month, a day of mourning for all *Sheeahs*,

Escape. his departure was put off. On the day appointed, when

evening set in, I repaired with a trembling heart to the tree of rendezvous, where I found the camel tied and my friend asleep. I hastened to awaken him, and put myself on the camel behind him, telling him to take me to Ramishk. On starting he took a road however direct north for a short distance, when arriving at his encampment, he left the camel.

I procured two asses on which he lost no time in mounting ; having refreshed ourselves with bread and milk ; and set out at a good quick amble over a strong road, in what I calculated to be a S. S. W. direction till morning, when we branched off the road at a right angle up a rivulet bed and dismounted, my deliverer returning on foot and effac-

ing the prints of the asses' hoofs. On the road I had frequently expressed my surprise at the rate our asses ambled, when **Barre asses.** he explained to me, that they were of the Barre caste, that is, a cross breed between the wild ass and the tame one, who are generally let loose in the jungles to graze. We were still in the district of Rodbar, and he informed me that the forts of the chiefs Suzad Khan and Mirza Khan were due west from the stage; here I went to sleep, while my benefactor kept watch on a neighbouring eminence.

27th March.—In the evening we again mounted and proceeded all night over an irregular and stony road through a waste, **Rameshk.** and towards morning, we arrived within sight of Rameshk, which place my guide, who gave me his name as Ally Maddat, refused to enter for fear of his being recognized, which disclosure would entail a feud he said between his people and those of my late master.

28th March.—In the evening again started and proceeded in a due east direction 10 kos, over a road in parts level and in others **Kutech.** irregular, to Kutech, a place containing 100 huts, where I would have had a fast, for my guide was afraid to enter the village, had I not gone myself and begged a few scraps of coarse bread and a handful of dates, on which we breakfasted.

29th March.—At noon we again started, and at sunset arrived at Motarabad. Motarabad on a level good road. At this place, which is a small one, Ally Maddat had a friend, from whom he procured a dinner of coarse bread and dates. At these two places **Tobacco.** tobacco is cultivated to some extent.

30th March.—Started for Punoch which was seven kos distant, and on the road met a man mounted on the very identical ass that Mahommed Ally of Bampoor had given me, and sitting on my saddle bags. I stopped him, and made him return with me **Property recovered.** to Punoch, in the mosque of which place I took up my quarters. I had no difficulty in proving my right to the ass and saddle bags, from which latter, however, all the articles of value had been extracted. The man appeared to be very indignant at being suspected of theft, and set out in a great hurry, promising to return with the man from whom he had purchased the property; however I never saw him again during my stay at Punoch. I was not able to see Oodeean myself, for reasons detailed above, but while at Punoch, I gained the following information regarding it from Futteh Khan and Ally Maddat.

(*To be continued.*)

*Observations on the Flora of the Naga Hills, by Mr. J. W. MASTERS,
Communicated by the Government of India.*

To Captain T. BRADY, Principal Assistant Commissioner of Assam.

SIR,—I have the honor to forward a few observations on the Flora of that part of the Naga hills, through which I had the honor to accompany you and Mr. Sub-Assistant Bedford during the last month, with a list of plants met with on the route. These observations, I fear, will be found very meagre; partly on account of our hurried march, partly on account of the nature of the country, and the season of the year; but more especially on account of my own ignorance of the subject; still they may be interesting to some, as they will show that the 500 different species here enumerated are found growing on those hills. This is but a small number for so large a breadth of country; but when we consider that they were all gathered on the line of march, and in a country inhabited by savages, where, had there been time, it would have been neither prudent nor practicable to leave the road to go in search of plants, 500 different species will be acknowledged to be as many as any one individual could expect to gather in the short space of one month. This number does not include all the different kinds of plants which I saw, but it includes the greater part of those from which I gathered specimens; and I here beg to observe, that I have put down in the list, none but such as I actually saw, and from which I brought away specimens. These specimens will serve for experienced Botanists to examine hereafter. Should you consider these observations to be interesting to Government, may I beg the favor of your forwarding a copy of them, should you have occasion to report on that portion of the frontier.

I have the honor to be, &c.

(Signed) J. W. MASTERS.

Seebaagar, the 29th March, 1844.

Botanical Observations made in Upper Assam, during the month of February 1844, while passing over that portion of the first ranges of the Naga Hills, lying between the Dikho and Dhunsiri Rivers.

The Flora of this portion of the hills resembles, in a great measure, that of the more elevated parts of the plains, especially, as along the uncultivated banks of rivers, and by the numerous little streamlets that

wind through the forests, we find forms similar to those found in the ravines between the hills, while on the little hillocks near the foot of the first range, and on the broken ground called *khorkunee*, we meet with many plants that are common to the slopes. Still I met with many plants which I have never seen in the plains, and some of those which I have seen down here, are evidently not at home.

The *Naga Bhe*, *Gordonia integrefolia*, Roxb. is often seen in the plains, but on the hills it is much more common, and grows to a larger tree. I met with it in abundance on every hill.

The little ornamental flowering shrubs called by the natives *Photiki* and *Phootkola*, (different species of *Melastomæ*,) in the deep ravines with hills of 3000 feet of elevation on each side, assume the character of small trees, with stems from eight to twelve feet high, and three or four inches in diameter. As our route lay for the most part through ground which had lately been under cultivation I did not meet with so large a number of species as I had previously calculated upon. Could I remain with safety on these hills for three or four years, I doubt not but I should reap a good harvest, but hurrying over them in the manner we were compelled to do, very little could be done in examining the Flora. I presume it would occupy an experienced Botanist 10 years to explore the whole of the Naga Hills, from the Booreedihing to the Dhunsiri, in a satisfactory manner; none of them having been hitherto visited by any Botanist.

Leaving the banks of the Dikho on the 27th of January, at the spot where in 1840 I collected some of the Namsang coal, and where Mr. Landers subsequently collected a larger quantity on the part of Government, we ascended the hills, passing over undulated ground and low hills of various elevations. Arriving in the neighbourhood of the coal measures, we passed up the bed of a very rugged water-course, which though nearly dry now, must in the rains pour down its torrents with a frightful velocity. Passing on to near the summit of the hill, we encamped in a forest of bamboos, a little below the village of Namsang.

While rising the hill, I observed the following plants: *Mesua ferrea*, *Careya arborea*, *Ficus elastica*, *F. scabrella*, *F. species?* *Dillenia speciosa*, *Chaulmoogra odorata*, *Embllica officinalis*, *Artocarpus integrifolius*, *A. Chaplasha*, *Xanthochymus pictorius*, *Liristoma assamica*, *Guarea binecta*

rifera, *Calamus hostilis*, *Goldfussia* two species, *Pladera*, a most delicate interesting species; and in the village, on the very summit of the sandstone rock, 2153 feet above the level of the sea, *Beaumontia grandiflora*, and the common dwarf elder. All the Naga villages are built on the very summit of the particular hills on which they are situated, and this village of Namsang is situated on the highest point of the Namsang Purbut; it is thickly studded with houses and crowded with inhabitants, having pigs and fowls in abundance. The men appeared remarkably active and healthy, but the women and children, (especially those who are necessarily more confined to the crowded village) appear pale and sickly.

A reference to Mr. Bedford's map of the route, will shew the situation of the villages visited, from our leaving Namsang on the 29th of January to our quitting Sonareegong, and descending to the banks of the Dyung on the 26th of February.

In the villages and the inhabitants, I observed comparatively but little difference, save that from Namsang to Samsa, the houses are all large, high pitched, and more or less supported by bamboo frame-work; while from Mickelai to Nowgong, the sites of the villages not being so rocky, the houses are all low pitched, and seldom supported by bamboo frame-work. All the houses are roomy, strongly built, well, and often very neatly, thatched. The granaries, which are generally situated in a detached part of the village, are all supported by bamboo frame-work.

As the villages are all on the summit of the hills, where the naked rocks frequently rise above the surface, there is very little spare ground for gardens or cultivation of any kind in the villages; but on every little spot on which a few inches of soil is found, attempts are made at gardening. In these we found onions, mustard, tobacco, *sun*, and a few stocks of sugar cane. I found the mangoe tree in almost every village, and some immensely large trees, as large as are generally found in Bengal; besides these, a few plants of the guava, peach, and plantain, with *Tagetes patula*, or the French marigold.

The cultivation of rice, millet, *kuchoo*, (Arum) pumpkins, ginger, *cap-sicum*, cotton and *rom* is carried on at a distance from the village, on the slopes of the hills. It appears to be the practice of the Nagas

to cut down heavy tree jungle, burn the trees and scatter the ashes over the ground, to cultivate this ground for two years, and then abandon it for ten years. Often I believe it is under cultivation only one year, and then abandoned for eight or ten, and this method agrees with the habits of the Nagas. With the implements they use, and the nature of the soil, the rapidity with which a body of Nagas will clear a large extent of dense forest is astonishing, and as they use no other implement but the *da*, they are ill prepared for digging. This single implement, the *da*, serves the Nagas to fell the forest, to dig the ground for his rice, to cut the food for his dinner, and to take off the heads of his enemies. The ground being prepared, the women put the rice and other grain in with a dibble. After the Naga has cultivated a piece of ground two years, and often one year only, he finds it so full of weeds, especially of the composite and labiate families, that it is not worth his while to sow it again, and he clears fresh jungle accordingly. The ground which I saw under cultivation two years ago, is now completely overrun with weeds and grass, and fresh jungle has been cleared in the neighbourhood for this year's crop. In the neighbourhood of Nangta, Kangsing and Nowgong, large tracts of ground were cleared ready for cultivation this season; some portions sown. The village of Kangsing is pleasantly situated on the summit of a rock, at an elevation of 2568 feet above the level of the sea, and commanding a fine view of the surrounding country. The houses were neatly thatched with different kinds of palm leaves. The leaves most generally used by the Nagas for thatching are *toko pāt*, *Levistonía Assamica*, *jengoo-pāt*, *Calamus hostilis*, *koosi-pūt*, *Melica latifolia* and Dr. Wallich's palm, or *Wallichia caryotoïdes*; the different kinds are often fancifully intermingled, and bound on with a neat ridge of grass at the top.

At the village of Asingia is a fine plant of the *sángoch*, or *Caryota urens*, one or two of these are generally met with in each village, as the soft hair in the sheaths of the leaves is used both by Nagas and Assamese for tinder. By the summary of villages visited, given below, it will be seen, that Lakhootée is the highest point to which we reached, 8700 feet, a considerable village. This peak is very conspicuous from the plains.

Summary of villages visited and elevations :—

		<i>Feet.</i>			<i>Feet.</i>
Namsang,	...	2153	Akook,	...	..
Nangta, ...	...	2868	Lakhoota,	..	... 3700
Kangsing,	...	2568	Khergong,	...	...
Nowgong,	...	2825	Sanagong,	...	..
Larayan,	...	2825	Nisang, ...	..	...
Santoong,	...	3000	Bhidara, ...	...	...
Deka Hymung, ..			Kaboong,	...	..
Boora Hymung, ...		2875	Duria, ..	...	...
Lassa,			Rungagong,	...	...
Atringia,	...	2600	Kerngong,	...	...
Kolaburia,	...		Sunka,	...	...
Samsa, ..	...		Tillogong,	...	..
Mickelai,	...		Sonareegong,	...	... 2150
Mohom,			Nowgong,	..	...

List of Plants seen and gathered during the Journey.

EXOGENÆ.

ORDER.—*Ranunculaceæ*.

1. *Haravelia zeylanica*, DeC. An oramental climbing plant, common in the plains. Rungagong.

2. *Ranunculus* (species?) Samsa. I was much surprised by not finding more of this family. I had calculated upon a considerable addition to my Herbarium in plants of this tribe, but the above are the only species I noticed, and those not frequently.

ORDER.—*Papaveraceæ*.

3. *Papaver somniferum*, Linn. The common white poppy ; this I found cultivated to a small extent in the last three or four villages, but did not meet with a wild species. Kaboong.

ORDER.—*Magnoliaceæ*.

4. *Liriodendron grandiflora*, Roxb. *Burrimtsati*. An ornamental flowering tree. Kangsing.

ORDER.—*Anonaceæ*.

5. *Anona* (species?) Leaves alternate, short petioled, elliptic, ferruginous underneath. Mickelai.
6. *Gualteria* Badajamba, Wall. Sohohai.
7. *Uvaria macrophylla*, Roxb. An ornamental plant. Larayen.
8. *Unona undulata*, Roxb. Sohohai.

ORDER.—*Dilleniaceæ*.

9. *Dillenia speciosa*, Thunb. Oh. A complete forest of this tree is found on the banks of the Dyung, but it is but thinly scattered on the hills. The fleshy scales of the fruit, *oh tenga*, are eaten as eagerly by the Assamese, as apples are eaten in England. Namsang.
10. *Delima sarmentosa*, Linn. Ditto.

ORDER.—*Araliaceæ*.

11. *Aralia digitata*, Roxb. A scandent plant common in the plains, often found growing on fig trees. Kangsing, Namsang.
12. *Aralia lucida*, Wall. A very ornamental tree, with shining leaves. Kangsing.
13. *Panax* species? Unarmed leaves, smooth, trifid or pennatifid, an ornamental shrub. Kangsing.
14. *Gastonia* (species?) Large ornamental leaves, long petioled, petate, 7 or 8 partite, leaflets grossly serrulate. Lakhootee.
15. *Gastonia* (species?) Arboreous, armed leaves, long petioled, petate, leaflets 9, smooth, acuminate to both ends, peduncles terminal, ferruginous, as long as the leaves. Larayen.

ORDER — *Vitaceæ*.

16. *Vitis latifolia*, Roxb. Kangsing.
17. *V. species*. Ditto.
18. *V. ditto*. Ditto.
19. *V. ditto*. Kahung.
20. *V. ditto*. Nangta.

These are vine-like plants not in blossom.

21. *Leea samburina*, Roxb. Sohohai.
22. *L. species*. Nangta.

ORDER.—*Oleaceæ*.

23. *Olex scandens*, Roxb. Leaves dotted, a large climbing ornamental plant. Kangsing.

ORDER.—*Combretaceæ*.

24. *Combretum* species. An ornamental plant. Kangsing.

25. *C. pilosum*, Roxb. Sohohai.

26. *Terminalia paniculata*, W. and A. A large ornamental timber tree, Larayen.

27. *T. chebula*, Retz. or *citima*, Roxb. *Hilliha*. A large timber tree, common in the plains. Sohohai.

ORDER.—*Melastomaceæ*.

28. *Melastoma Malabathricum*, Linn. A very ornamental flowering shrub common in the plains. Namsang.

29. *M. erecta*, Jack? Larayen.

30. *M. glauca*, Jack? A large and elegantly flowering plant, 10 feet high, leaves dotted. Sohohai.

31. *M. cernua*, Roxb. A very elegant species. Sohohai.

32. *M. curva*, Roxb.? Not in flower. Namsang.

33. *M. gracilis*, Jack. Not in blossom. Namsang.

34. *M. alpestris*, Jack? Ditto.

35. *M. obvoluta*, Jack? Ditto.

The *Melastomeæ* are very common in the plains, but they grow to great perfection in the ravines in among the hills, as on the banks of the Sohohai, Tookum Jewry, the Bontook, the Teroo, and Duria Panee.

ORDER.—*Myrtaceæ*.

36. *Careya arborea*, Roxb. Namsang.

37. *Syzygium jambolanum*, DeC. Sonagong.

38. *S. caryophyllum*, Gavert. Larayen.

39. *S. species*. Ditto.

40. *Psidium pyrifera*, Lin. *Moodhriam*. Asringia.

This plant (the guava) though very common in the plains, and frequently met with at the foot of the hills, I did not see very common in the Naga villages. In the plains it is a common jungle plant.

ORDER.—*Loranthaceæ*.

41. *Loranthus* species, *Rugoo Nulla*. Kangsing.
 42. *L. globosus*, Roxb. Ditto

ORDER.—*Cucurbitaceæ*.

43. *Tricosanthes palmata*. Larayen.
 44. *T. species*. Not in flower, leaves deeply 5-lobed, lobes acuminate, strongly marked with nerves and veins. Kangsing.
 45. *Bryonia scabrella*, Linn. Nowgong.
 46. *Cucurbita lagenaria*, Linn. *Mita Lao*.
 47. *C. pepo*, Linn. *Komra*. Lassa.
 48. *Luffa pentandria*, Roxb. *Doondool*. Asringia.

Nos. 46 and 47 must be cultivated to a considerable extent, as I saw large quantities of the fruit in all the villages, though it was not the season for the plants.

ORDER.—*Begoniaceæ*.

49. *Begonia* species. Diœcious, colored, every part hairy, stem procumbent, jointed, petioles from 12 to 18 inches long, leaves large, cordate, unequal-sided, acuminate, pilose on both sides, male and female flowers on different plants, large and showy, sepals in the male, two of which are small, two much larger, membranous, the margin white within side, slightly coloured, pink without, sepals in the female 4 or 5, when five, three are smaller, scarcely coloured, and less hairy on the outside than the male; an elegant large flowered species.

50. *B. species*. Not in flower. Petioles and nerves on the under-surface of the leaf pilose, leaves unequal-sided, variously lobed, lobes acuminate. Lassa.

51. *B. species*. Not in blossom, caulescent, leaves smooth, unequal-sided. Nangta.

52. *B. species*. Stem procumbent, leaves petioled, orbicular, sprinkled with rust-coloured pores, often purple underneath, outer sepals red, inner white, ligulate, stamens numerous; only one flower seen, found growing on the sandstone rocks at Namsang. Elevation 2153 feet.

ORDER.—*Cruciferaæ*.

53. *Sinapis dichotoma*, Roxb. Samsa.
 54. *S.* a small species found on the Namsang. The mustard appears to be but sparingly cultivated among the Nagas.

ORDER.—*Capparidaceæ*.

55. *Gynandropsis pentaphylla*, DeC. *Hoorhooia*. Namsang.

ORDER.—*Violaceæ*.

56. *Viola Patrinii*. Flowers blue. Kangsing.

ORDER.—*Flacourtiaceæ*.

57. *Flacourtia cataphracta*, Linn. *Punial*. Kangsing.

58. *Chaulmoogra odorata*, Roxb. *Lemtem*. Namsang.

ORDER.—*Guttiferaæ*.

59. *Mesua ferrea*, Linn. *Nahor*. An eminently ornamental flowering plant, yielding the most durable timber known in Assam. Namsang.

60. *Xanthochymus pictorius*, Roxb. *Tapar*. Namsang.

61. *Garcinia pedunculata*, Roxb. *Bor tekara*. An ornamental tree, fruit eaten by Assamese. Namsang.

62. *Garcinia*, *Kooji-tekara*. Leaves opposite, short petioled, elliptic, mucronate, shining on both sides, veins prominent. Mohom.

ORDER.—*Ternströmiaceæ*.

63. *Camellia*, species, not in flower. The *Heelkath* of this part of the district.

Misaphlap of Muttock. This plant is common on the hills, and also in the plains, but I saw no tea between the Dikho and Dhunsiri rivers. Deka Hymung.

ORDER.—*Sapindaceæ*.

64. *Sapindus fruticosus*, Roxb. Dyung.

65. *S. emarginatus*, Roxb. Samsa.

66. *Schneideria serrata*, DeC. Larayen.

67. *Pierardia sapida*, Roxb. *Letikoo*. Banks of the Sohohai.

68. *Millingtonia pungens*, Wall. Lassa.

69. *M. species*. Leaves crowded about the end of the branches, acuminate to the base, mucronate at the apex. Boora Hymung.

ORDER.—*Æsculaceæ*.

70. *Æsculus species*. Not in flower. Sohohai.

ORDER.—*Sterculiaceæ*.

71. *Sterculia alata*, Roxb. Namsang.

72. *S. villosa*, Roxb. *Oodal*. Ditto

73. *Kleinhovia hospita*, Linn. Bhedam.

74. *Abroma agusta*, Linn. Larayen.
 75. *Bombax Malabaricum*. DeC. *Hunool*. Larayen.
 76. *Kydia calycina*, Roxb. Lakhoota.
 77. *Pterospermum suberifolium*, Lam. Kangsing.
 78. *P. lanceæofolium*, Roxb. Larayen.
 79. *P. acerifolium*, Willd. Asringia.
 80. *P. species?* Leaves alternate, short petioled, ovate, acuminate, obscurely 3-nerved, quite entire, smooth above, ferruginous underneath. Samsa.

81. *Buttneria aspera*, Coleb. Ditto.

ORDER.—*Malvaceæ*.

82. *Hibiscus macrophyllus*, Roxb. Larayen.
 83. *H. rosa—sinensis*, Linn. Mohom.
 84. *Urena labiata*, Linn. Ditto.
 85. *Gossypium Indicum*, Linn. Ditto.

ORDER.—*Elæocarpaceæ*.

86. *Elæocarpus lucidus*, Roxb. Akook.
 87. *E. oblongus*, Ejaert. Boora Hymung.
 88. *E. aristatus*, Roxb.
 89. *E. ganitrus*, Roxb. *Roodrakh*. Sonareegond.

ORDER.—*Dipteraceæ*.

90. *Dipterocarpus alatus*, Roxb. Mohom.
 91. *D. turbinatus*, Gaert. Nangta.
 92. *D. species*, *Hoollung*. Mohom.
 93. *D. species?* *Makai*. Nangta.

These are trees of the first magnitude, growing to an immense height, yielding more or less oil or resin, and excellent timber.

ORDER.—*Tiliaceæ*.

94. *Trumfetta oblonga*, Wall. Nowgong.
 95. *T. trilocularis*, Roxb. Larayen.
 96. *Grewia columnaris*, Linn. Ditto.

ORDER.—*Lythraceæ*.

97. *Lagerstræmia regina*, Roxb. *Hasar*. Kamsing.

ORDER.—*Meleaceæ*.

98. *Amoora rohitrika*, W. and A. Boora Hymung.
 99. *Guaria binectinefera*, Roxb. *Bondur Demoora*. Namsang.

- 100. *Walsura robusta*, Roxb. Mohom.
- 101. *Cedrela toona*, ditto, *Poma*. Lassa.

ORDER.—*Aurantiaceæ*.

- 102. *Bergera integerrima*, Buch. Deka Hymung.
- 103. *Triphasia trifoliata*, DeC. Larayen.
- 104. *Limonia* species? Kaboong.
- 105. *L.* species. Dyung Banks.
- 106. *Citrus decumana*, Linn. Lakoota.
- 107. *C. aurantium*, ditto, *Hoontora tenga*. Villages common.
- 108. *C. medica*, Linn, ditto. Ditto.
- 109. *C. acida*, Roxb. ditto. Ditto.

ORDER.—*Spondiaceæ*.

- 110. *Spondias mangifera*, Pers. *Amra*. Kangsing.

ORDER.—*Rhamnaceæ*.

- 111. *Zizyphus jujuba*, Lam. *Boghory*. Namsang.
- 112. *Z.* species? Leaves distinctly 3-nerved, nerves feathered, young parts ferruginous. Banks of the Dyung.
- 113. *Z.* species? Leaves obscurely 4 or 5-nerved, midrib and interior side of the nerves not feathered. Kangsing.
- 114. *Ceanothus asiaticus*, Linn. Namsang.

ORDER.—*Euphorbiaceæ*.

- 115. *Croton tiglium*, Linn. *Konibhi*. Rungagong.
- 116. *C. drupaceum*, Roxb. Kangsing.
- 117. *Ricinus communis*, Linn. Namsang.
- 118. *Andrachne trifoliata*, Roxb. *Uriam*. Ditto.
- 119. *Bradleia amosna*, Wall. Kangsing.
- 120. *Adelia nereifolia*, Roxb. Dyung.
- 121. *Emblica officinalis*, Gaert. *Amlooki*. On every hill.
- 122. *Euphorbia ligularia*, Roxb. Kangsing.
- 123. *Cluytia collina*, Linn. Sohohai.
- 124. *C. scandens*, Roxb. Ditto.
- 125. *Sapium sebiferum*, Roxb. Kangsing.

ORDER.—*Celastraceæ*.

- 126. *Salacia longifolia*, Wall. Kangsing.
- 127. *S.* species, leaves elliptic, remotely serrated. Sohohai.

128. *S. species?* smaller. Sonareegong.

129. *Celastrus species?* Sohohai.

130. *C. species.* Larayen.

ORDER.—*Xanthoxylaceæ.*

131. *Fagara Budringa*, Roxb. Kalaburia.

132. *Xanthoxylum species.* Leaflets dotted. Larayen.

ORDER.—*Balsaminaceæ.*

133. *Impatiens species.*—Herbaceous, perennial, stem procumbent, rooting, branches marked with the cicatrices of fallen leaves. Leaves crowded about the ends of the branches, alternate, petioled, acuminate to both ends, finely serrated, serratures bristle-pointed, sprinkled with a few hairs on the upper surface, glandular towards the base and on the petioles. Peduncles axillary, about two inches long with two subulate bracteoles about the middle, one or two flowers large, spreading, showy, bright rose-colored. Calyx spurred, lateral sepals similar, cordate, acuminate, green, the other two dissimilar, one white, carinate spurred, the other highly colored with a sharp green keel on the other side. Petals more or less united, inclining to one side. Found running over the rocks in the Deeria-panni.

134. *Impatiens natans*, Roxb. Jhanzy.

135. *I. latifolia*, Linn. Mohom.

ORDER.—*Oxalidaceæ.*

136. *Averrhoa carambola*, Linn. *Kordatenga*. Namsang.

137. *Oxalis.* A small species. Larayen.

ORDER — *Rosaceæ.*

138. *Rosæ chinensis*. Roxb. Namsang.

139. *Rubus rugosus*. Linn. Kangsing.

140. *R. Wallichiana*, W. and A. This I first saw at Boora Hy-mung, on a plant lately sown, the leaflets were retuse, but on several others at Akook in blossom, they perfectly agree with Wight's figure and description. An ornamental plant.

141. *R. hexagynus*, Roxb. Sohohai.

142. *R. racemosus*, ditto? Young plants densely clothed with glandular hairs; fruit cylindrical. Sohohai.

143. *R. rassæfolius*, Roxb.? Petioles and peduncles sprinkled with glandular hairs. I see none on the leaves. Santoong.

144. *R. species*. A large scandent shrub, armed with recurved prickles. Leaves alternate, long petioled, trifoliate, leaflets smooth, broadly ovate, sharply dentate. Sohohai.

145. *R. species*. Coloured, armed with numerous recurved prickles, and densely clothed with brown hairs. Leaves alternate, simple, distinctly 5-nerved, distinctly 5-lobed, lobes acuminate, dentate, more or less hispid on the nerves on both sides, armed with recurved prickles on the under side, and clothed with white down between the nerves. Lakhootee.

146. *Fragaria Indica*, Roxb. Boora Hymung.

147. *Amygdalus Persica*, Roxb. *Amboghory*. Deka Hymung. Lakhootee.

ORDER.—*Leguminosæ*.

148. *Dunbaria species*? Not in blossom. Namsang.

149. *Rohinia species*. Kangsing.

150. *R. candida*, Roxb. Namsang.

151. *Bauhinia piperifolia*, Roxb. Not in flower, leaflets often separated to the base. Sohohai.

152. *B. corymbosa*, Roxb. Kahoong.

153. *B. acuminata*, Willd. Namsang.

154. *Dolichos scarabceoides*, Roxb. Dyung.

155. *D. lablab*, ditto. Kangsing.

156. *Crotalaria tetragona*, ditto. Ditto.

157. *C. species*. Deka Hymung.

158. *Uvaria picta*, Desv. Nangta.

159. *Flemingia stricta*, Roxb. Lakhootee.

160. *F. strobilifera*, Br. Namsang,

161. *Dalbergia frondosa*, Roxb. Kangsing.

162. *D. robusta*, ditto. Sonareegong.

163. *D. dumosa*, ditto. Larayen.

164. *D. zeylanica*, ditto. Ditto.

165. *D. species* scandent. Duriagong.

- 166. *Entada purætha*, DeC. Kangsing.
- 167. *Acacia amara*, Willd. Sonareegong.
- 168. *A. species*. Not in flower. Kangsing.
- 169. *A. stipulata*, DeC. Akook.
- 170. * * * * Nangta.
- 171. *Erythrina Indica*, Linn. Kangsing.
- 172. *E. stricta*, Roxb. Boora Hymung.
- 173. *Cassia glauca*, Lam. Larayen.
- 174. *Desmodium polycarpum*, DeC. Boora Hymung.
- 175. *Mimosa elata*, Roxb. Samsa.

ORDER—*Anacardiaceæ*.

- 176. *Mangifera Indica*, Linn. *Am.* Kangsing.
- 177. *Holigarna racemosa*, Roxb. Ditto.
- 178. *Rhus vernix*, Linn. *Ahom Etha.* Larayen.
- 179. *R. species*. Kangsing.
- 180. *R. species*. Larayen.
- 181. *Buchanania angustifolia*, Roxb. Namsang.

ORDER—*Cupuliferaæ*.

182. *Quercus species*. Trunk erect, from fifty to eighty feet high, and from two to four feet in diameter, bark rugged and rusty, leaves alternate, long-petioled, acuminate, serrate, serratures tapering to a fine point. Fruit sessile, cup clothed with scales. *Asringia*.

183. *Q. fenestrata*, Roxb. Ditto.

184. *Castanea species*. A middling-sized tree, leaves alternate, smooth, wood marked by 3 grooves. Namsang.

185. *C. species*. A large tree. Kangsing.

ORDER—*Betulaceæ*.

186. *Betula species?* A large tree from sixty to eighty feet high and three feet in diameter. Bark fragrant and peeling off. Leaves generally in alternate pairs with a bud between them. This is the principal tree at Larayen, found also at Lakootie and Deka Hymung. Recognized by the Sipahes as the Puddum of Munnipoor.

ORDER.—*Urticaceæ*.

- 187. *Ficus lanceolata*, Roxb. Jhanzy Banks.
- 188. *F. Indica*, Linn. Kangsing.

189. *F. elastica*, Roxb. Ditto.
 190. *F. benjamina*, ditto. Ditto.
 191. *F. scabrella*, ditto. Namsang.
 192. *F. scandens*, ditto. Ditto.
 193. *F. excelsa*, Vahl. Sohohai.
 194. *F. jewry*, Griff. Ditto.
 195. *F. species*. Leaves alternate, short-petioled, lanceolar, minutely dotted. Larayen.
 196. *F. species*. A large tree, unequal-sided, dotted, tapering to a fine point. Kangsing.
 197. *F. hirsuta*, Roxb. Mohom.
 198. *F. species*. Leaves 3-nerved, 3-lobed. Kangsing.
 199. *F. species*. Leaves linear. Lassa.
 200. *F. species*. Leaves ovate, serrate, acuminate. Namsang.
 201. *F. religiosa*, Linn. Lakhootee.
 202. *Urtica species*. Leaves ovate, 3-nerved, distinctly dotted. Namsang.
 203. *U. suffruticosa*, Roxb. Asringia.
 204. *U. species*. Leaves long, petioled, 3-nerved, dotted, Kangsing.
 205. *U. pulcherrima*, B. Larayen.
 206. *Urtica penduliflora*, Roxb. Larayen.
 207. *U. heterophylla*, Roxb. Phossat. Lukhootee.
 208. *U. species*. Leaves 3-nerved. Namsang.
 209. *U. species*. Banks of the Jhanzy.
 210. *U. species*. Leaves dotted, 3-nerved, rounded at the base. Namsang.
 211. *Buchneria viminia*. Ditto.
 212. *Artocarpus integrifolius*, Linn. Ditto.
 213. *A. chaplasha*, Roxb.? Sham. A first rate timber tree, common in the plains. The fruit is eagerly eaten by the Assamese. Mohom.
 214. *A. Lakoocha*, Roxb. Deorsalli. Asringia.
 215. *Trophis aspera*, Retz. Nowgong.

ORDER.—*Ulmaceæ*.

216. *Ulmus virgata*, Roxb. Boora Hymung.
 217. *Celtis orientalis*, Linn. Kangsing.

ORDER — *Myricaceæ*.

218. *Nageia putranjiva*, Roxb. Kangsing.

ORDER.—*Juglandaceæ*.

219. *Juglans pberococa*, Roxb. Larayen.

ORDER.—*Piperaceæ*.

220. *Piper betle*, Linn. *Pan*. Namsang.
221. *P. longum*, Linn. Ditto.
222. *P. rostratum*, Roxb. ? Nowgong.

ORDER.—*Balsamaceæ*.

223. *Liquidambar*, *Jootooli*. Larayen.

ORDER.—*Elæagnaceæ*.

224. *Elæagnus conforta*, Roxb. Kangsing.

ORDER.—*Aquilariaceæ*.

225. *Aquilaria agallocha*, Roxb. *Hansi*. The bark of this tree was formerly used for writing on, and often is so now by the Assamese; they also use it for bed mats. Good paper has been manufactured out of it. A thin slip of the bark, about 4 inches in breadth and 18 inches in length, is worn by the Namsangia Nagas, which hangs loosely, swinging behind them as a substitute for breeches. They wear nothing before. Nangta.

ORDER.—*Lauraceæ*.

226. *Laurus obtusifolius*, Roxb. Larayen.
227. *L. species*, *Ratti hoendu*. Leaves 12 inches long and 6 broad. Kangsing.
228. *Tetranthera*, *Soom*. Namsang.
229. *T. species*. Mohom.
230. *T. species*. Kangsing.
231. *T. species*. Ditto.
232. *T. species*, *Mazan Roon*. Kangsing.

ORDER.—*Amarantaceæ*.

233. *Amarantus spinosus*. Kangsing.
234. *Celosia cristata*, Roxb. Jhanzy.
235. *Deeringia celasoides*, Roxb. Larayen.

ORDER.—*Polygonaceæ*.

236. *Polygonum species*. Leaves dotted. Kangsing.
237. *P. fragrans*, *Boka pothar*.

238. *P. species*. Stipules double, outer two lobes orbicular, leaves short-petioled, oblong, acuminate, dotted. Kangsing.

239. *P. species*. Stipules double, outer 3 green, leaves alternate, short-petioled, oblong, acuminate, cordate at the base, minutely dotted. Flowers axillary and terminal, white, disk glandular, stamens 8, style 3-cleft, stigmas capitate, seed 3-angled, a scandent plant. Kangsing.

240. *P. species*. Branches creeping, rooting, every part clothed with glandular hairs, leaves cordate, dotted, flowers terminal, rose-coloured, disk glandular, stamens 8-style, 3-cleft. Kangsing.

241. *Rumex species*. Nowgong.

ORDER.—*Menispermaceæ*.

242. *Menispermum polycarpum*, Roxb. Sohohai.

ORDER.—*Myrsinaceæ*.

243. *Myrsine species*. Kangsing.

244. *M. capitulata*, Roxb. Ditto.

245. *Ardisia floribunda*, Wall. Jhanzy.

246. *Baeobotrys nemoralis*, Forst. Kangsing.

247. *B. species*. Mickelai.

ORDER.—*Ebenaceæ*.

248. *Diospyros racemosa*, Roxb. Kangsing.

249. *D. stricta*, Roxb. Namsang.

250. *D. chenum*, Roxb. Samsa.

251. *D. sapota*, Roxb. Sohohai.

ORDER.—*Convolvulaceæ*.

252. *Porana racemosa*, Roxb. Kangsing.

253. *Argyria strigosa*. Mohom.

254. *A. splendens*, Swt. Tillo.

255. *A. argentia*. Tillo.

256. *Convolvulus trifolius*, Roxb. Simka.

257. *C. pentagonus*, Roxb. Sonaree.

ORDER.—*Lobeliaceæ*.

258. *Lobelia robusta*, Wall. Larayen.

ORDER.—*Cinchonacea*.

- 259. *Randia longespina*, DeC. Kangsing.
- 260. *R. racemosa*, Roxb. Boora Hymung.
- 261. *Morinda angustifolia*, Roxb. Kangsing.
- 262. *Hedyotes scandens*, Roxb. Larayen.
- 263. *Mussaenda scandens*. An extensive climbing plant. Larayen.
- 264. *M. species*. Ditto.
- 265. *Ixora species*. Not in flower. Namsang.
- 266. *Coffea Bengalensis*. Rungagong. This is common in the plains.
- 267. *Nauclea parviflora*, Roxb. Bhedaree.
- 268. *N. cadamba*, Roxb. Rogoo. Namsang.
- 269. *Rondeletia paniculata*, Roxb. Larayen.
- 270. *Uncaria sessilifructus*, Roxb. Mohom.
- 271. *Parderia foetida*, Linn. Lakhootee.

ORDER.—*Sambuceæ*.

- 272. *Sambucus ebulus*, Roxb. Namsang.

ORDER.—*Compositæ*.

- 273. *Elephantopus scaber*, Linn. Kolaburia.
- 274. *Spilanthis armilla*, Linn. Kaboong.
- 275. *Gnaphalium strictum*, Roxb. Namsing.
- 276. *G. orixensis*, Roxb. Mohom.
- 277. *Conyza lucta*, Wall. ? Ditto.
- 278. *C. balsamifera*, Roxb. Ditto.
- 279. *C. pennatifida*, Buch. Lakhootee.
- 280. *C. alata*, Roxb. Mohom.
- 281. *C species*. Boora Hymung.
- 282. *C. species*. Larayen.
- 283. *C. species*. Asringia.
- 284. *C. species*. Mohom.
- 285. ? *species*. Larayen.
- 286. ? *species*. Samsa.
- 287. ? *species*. Mohom.
- 288. *Centaurea species*. Dyung B.
- 289. *Pectis species*. Larayen.
- 290. *Tagetis patula*, Roxb. Kangsing.
- 291. *Sonchus species*. Sohohai.

292. *S. orixensis*, Roxb. Boora Hymung.

293. *Artimelia grata*, Wall. Larayen.

294. *Bidens trifida*, Buch. Namsang,

295. *Conyza angustifolia*, Roxb. Mohom.

296. *Eupatorium* species. Lakhootee.

297. *E. species*. Samsa.

298. *E. species*. Boora Hymung.

299. *E. species*. Namsang.

300. *E. species*. Akooki.

301. *Siegisbeckia orientalis*, Roxb. Nowgong.

302. *Conyza* species. Namsang. All the lands which had been under cultivation during the last season were crowded with Compositæ, but I did not succeed in getting specimens of all that I saw, and have not sufficient data by me to determine the above in a satisfactory manner.

ORDER.—*Plantaginaceæ*.

303. *Plantago* species. Kangsing.

ORDER.—*Cordiaceæ*.

304. *Cordia* species. Leaves 3-cordate. Kangsing.

ORDER.—*Labiataæ*.

305. *Ajuga repens*, Roxb.? A showy plant, with beautiful blue flowers. Akooka.

306. *Mentha* species. Leaves cordate, serrate. Nowgong.

307. *M. paniculata*, Roxb. Mohom.

308. *M. species*. Leaves elliptic. Ditto.

309. *Salvia* species. Every part clothed with odoriferous glands. Nangta.

310. *Ocimum sanctum*, Linn. Lakhootee.

ORDER.—*Verbenaceæ*.

311. *Verbena officinalis*, Linn. Mickelai.

312. *Premna scandens*, Roxb. Larayen.

313. *P. grandiflora*, Wall.? Mickelai.

314. *Clerodendron nutans*, Wall. Samsa.

315. *C. species*. Kangsing.

316. *C. imfortunatum*, Linn. Sohohai.

317. *C. viscosum*? Calyx glandular. Kaboong.

318. *C. serratum*, Don. Kangsing.

319. *Callicarpa* species. Arboreous from 30 to 40 feet high, bark rough, all the young parts tomentose, leaves alternate, flowers terminal. Larayen.

320. *C. lanceolaria*, Roxb. Samsa.

321. *C. Reevesia*? Mickelai.

ORDER.—*Bignoniceæ*.

322. *Bignonia cauliflora*, Wall.? Larayen.

323. *B. suaveolens*, Roxb. Namsang.

324. *B. chelonoides*, Roxb. Ditto.

325. *B. Indica*, Linn. Ditto.

ORDER.—*Crytandaceæ*.

326. *Incarvillia parasitica*, Roxb. Sohohai.

327. *I. oblongifolia*, Roxb. Mohom.

ORDER.—*Acanthaceæ*.

328. *Ruellia dependens*, Roxb. Larayen.

329. *R. latebrosa*, Roxb. Booru Hymung.

330. *Justicia speciosa*, Roxb. Nangta.

331. *J. thyrsiflora*, Roxb. Kaboong.

332. *J. parviflora*, Wall.? Namsang.

333. *J. Adhatoda*, Roxb. Mickelai.

334. *J. species*. In habit like *Adhatoda*, with orange coloured flowers. Mickelai.

335. *J. Gendurussa*, Linn. Namsang.

336. *Eranthemum pulchellum*, Roxb. Ditto.

337. *Thunbergia grandiflora*, Roxb. Ditto.

338. *T. Wall.* Kaboong.

339. *Goldfussia* species. Leaves unequally purple, underneath flowers white, found in the ravines between Namsang and Nangta.

340. *G. species*. Not coloured, leaves unequally paired, flowers large, of a lilac color. Nangta.

341. *G. species*. Flowers yellow. Namsang. I have not the character of this genus to refer to, it is not in any book which I have access to

at present, and the same remark applies to all the species given under *Justicia*, as the greater part of them have been placed with other genera by modern Botanists. I have no monograph of any single family of plants by me here, so cannot avail myself of any of the late improvements.

ORDER.—*Scrophulariaceae.*

342. *Terronia*, Roxb. Kangsing.

343. *Buddleia Neemda*, Buch. Nangta.

ORDER.—*Solanaceae.*

344. *Solanum Jacquinii*, Willd. Nowgong.

345. *S. Indicum*, Linn. Ditto.

346. *S. pubescens*, Willd. Lakhootee.

347. *S. species*. Unarmed, leaves obovate. Mohom.

348. *Nicotiana tabaccum*, Linn. Ditto.

349. *Capsicum frutescens*, Roxb. Kangsing.

ORDER.—*Gentianaceae.*

350. *Exacum bicolor*, Roxb. Sohohai.

351. *Pladera virgata*, Roxb.? Probably a new species, as Roxburgh says his plant is erect; this is trailing, branches acutely 4-angled, leaves opposite, short petioled, 3-nerved, smooth, calyx distinctly 4-partite, 2 segments large, striped with pink, 2 smaller white, bearing the longer stamen, which is twice the length of the other three, throat of the corolla yellow. This is one of the most interesting plants I met with, as it bears such a profusion of flowers, and accompanied us at every step from the Dikho to the Dyung. I saw it on the summit of every hill on both sides of the road, on every slope, and at the bottom of every ravine.

ORDER.—*Apocynaceae.*

352. *Beaumontia grandiflora*, Wall. This very elegant and powerful climber I have not hitherto met with in the plains, and I saw but one plant in our journey over the hills, and that was at an elevation of 2,153 feet. Namsang.

353. *Echites macrophylla*, Roxb. Sohohai.

- 354. *E. acuminata*, Roxb. Boora Hymung.
- 355. *E. species*. Not in flower. Ditto.
- 356. *Nerium grandiflorum*, Roxb. Ditto.
- 357. *Ichnocarpus frutescens*, H. R. Mohom.

ORDER.—*Oleaceæ*.

- 358. *Phillyrea robusta*, Roxb. ? Larayen.
- 359. *P. grandiflora*, Wall. Samtoong.
- 360. *Chondrospermum smilacifolium*, Wall. Sohohai.
- 361. *Chionanthus macrophyllus*, Wall. Kangsing.
- 362. *C. zeylanica*, Linn. Kangsing.
- 363. *C. dichotoma*, Roxb. Ditto.

ORDER.—*Jasminaceæ*.

- 364. *Jasminum aristatum*. Boora Hymung.

ORDER.—*Equisetaceæ*.

- 365. *Equisetum debilis*, Roxb. Jhanzy.

ENDOGENÆ.

ORDER.—*Scitamineæ*.

- 366. *Alinia species*. Namsang.
- 367. *A. allughas*, Roxb. Ditto foot.
- 368. *Hedychium angustifolium*, Roxb. Ditto.
- 369. *Zingiber species*. Mohom.
- 370. *Z. officinalis*, Roxb. ? Cultivated.
- 371. *Costus speciosus*, Roxb. ? Namsang.
- 372. *Phrynium dichotomum*, Roxb. Ditto.
- 373. *Canna Indica*, Linn. Ditto.
- 374. *Maranta species*, *Copat*. Mickelai.

ORDER.—*Musaceæ*.

- 375. *Musa sapientum*, Linn. Namsang.
- 376. *M. coccinea* *Andi*. Nangta.

ORDER.—*Iridaceæ*.

- 377. *Iris species*. Not in flower. Namsang.
- 378. *Marica species*. Ditto. Akook.

ORDER.—*Orchidaceæ*.

379. ? species. Namsang.
 380. ? „ Terrestrial. Akook.
 381. ? „ Epiphite. Ditto.
 382. ? „ Namsang.
 383. ? „ Terrestrial. Sohohai.
 384. *Cypripedium venustum*. Namsang.
 385. ? species, Epiphite.
 386. ? Ditto, ditto. Nangta.
 387. ? Ditto, ditto. Namsang.
 388. ? Ditto, ditto. Kangsing.
 389. *Dendrobium Pieradii*. Sohohai.
 390. *D. densiflorum*, Wall. ? Mohom.
 391. *Coellogzne** species. Kangsing.

ORDER.—*Palmaceæ*.

392. *Calamus, Ryding*. Kangsing.
 393. *C. rotang*, Roxb. Nowgong.
 394. *Areca gracilis*, Roxb. Mohom.
 395. *Wallichia caryotoides*, Roxb. Nangta.
 396. *Caryota urens*, Roxb. Nowgong.
 397. *Livistonia assamica*, Griff. Namsang.

ORDER.—*Commelinaceæ*.

398. *Anceilema*† species. Kangsing.

ORDER.—*Roxburghiaceæ*.

399. *Roxburghia viridiflora*. Samsam.

ORDER.—*Dioscoreaceæ*.

400. *Dioscorea* species. Sohohai.
 401. *D. species*. Kolaburia.
 402. *D. alata*, Roxb. Boora Hymung.

ORDER.—*Pandanaceæ*.

403. *Pandanus odoratissimus*. Kangsing.
 404. *P. furcatus*, Roxb. Ditto.
 405. *P. species*, small. Sohohai.

* So in MSS.

† So in MSS.

ORDER.—*Araceæ*.

406. *Pothos officinalis*, Roxb. Nangta.

407. *P. scandens*, Roxb. Sohohai.

408. *P. caudata*, Roxb. Kangsing.

409. *Pothos laria*, Roxb. Sohohai.

410. *P. species*. Leaves large oblong, with parallel. Kangsing.

411. *Arum species*. Small leaves, smooth, with dark ovate spots, found growing on the rocks, Sohohai. Besides these, a large species of *Arum*, *Naya Kushoo*, is cultivated to a great extent, and brought down into the plains for sale. The root is globular. I have not seen the plant.

ORDER.—*Gramineæ*.

412. *Melia latifolia*, Roxb. *Koosepat*. This is the principal plant to be met with on all the slopes that have not been under cultivation for three years. At great elevations it is less succulent than in the plains, and acquires a firmer texture, that is, if the plants are identical. There may be two or three different species.

413. *Coix lachryma*, Linn. Nangta.

414. ? species. *Langmai*. Kangsing.

415. *Saccharum officinarum*, Linn. Ditto.

416. *S. Sara*, Roxb. Bora Hymung.

417. *S. species*. *Puddumpuli*. Kangsing.

418. *Oryza sativa*, Linn. Cultivated.

Bambusæ. There is a vast variety of the Bamboo genus spread all over the hills, especially in the ravines near the water-courses, and they appear to have been not unfrequently planted in the neighbourhood of villages, in order to their yielding a ready supply. I am unable to give a correct specific name to those which I met with, but here add the native name of seven species or varieties recognized by the Assamese.

419. *Jattie Bank*.—A strong useful bamboo, preferred for building purposes.

420. *Bijulee B*.—Very large and strong.

421. *Bazal B*.—A small straight rind used for mats, &c.

422. *Boolooka B*.—A large hollow rinds used for carrying water by the Nagas.

423. *Kanhoo B.*—Large and firm.

424. *Watooi B.*—Small.

425. *Bhee B.*—Reported to be poisonous.

ACROGENS.

Filices.

426 to 451. Of ferns I collected 26 species, among which is the gigantic tree fern, but I have not sufficient data by me to determine the genera and species.

Musci.

452 to 470. Of fungus only 6 species.

Miscellanea.

477? Arboreous. All the young parts densely covered with rusty tomentæ, leaves alternate, oblong, lanceolate, sharply serrate, smooth above, clothed with ferruginous down, underneath, veins conspicuous, parallel, anastomizing at or just within the margin. Larayen.

478. *Rottlera tinctoria*, Roxb. Nowgong.

479? Compositæ. A very large plant for this family, from 10 to 200 feet high, the trunk near the ground from 3 to 6 inches in diameter, wood very hard and heavy. Leaves alternate, sessile or nearly so, ovately lanceolate, acuminate most towards the base, remotely dentate, smooth on the upper surface, a little downy underneath, principal veins strong, parallel anastomizing near the margin, 18 inches long by 6 broad, flowers very numerous in large terminal spreading panicles, found on every hill between the Dikho and Dyung rivers.

COMPOSITÆ.

480. *Tunglatty*. Shrubby, many erect branches often springing from the same, perennial root, every part woolly and fragrant. Leaves alternate, petioled, acuminate to both ends, serrated, serratures ending in a rigid point, downy on both sides, with 4 nearly opposite subulate appendages to the petiole, very common in the plains, covering large tracts of land. I frequently met with it on the hills, but not in flower. Kangsing.

481. ? Compositæ. A small herbaceous, erect, branching in every part, densely covered with odoriferous glands. Branches winged, wings

broadly fringed. Leaves alternate, serrate, acuminate to both ends, flowers axillary, and terminal. Larayen.

482. ? An ornamental tree with shining leaves; in appearance it resembles *Carallia lucida*, Roxb., but I see no serratures on the leaves. Kamsing.

483. *Gordonia integrifolia*, Roxb. *Nagabi*. Kamsing.

484. ? A very ornamental climbing plant, with opposite acuminate smooth leaves, and numerous white flowers. Namsang.

485. ? A most powerful climber, running over the tops of the highest trees. Leaves crowded near the ends of the branches, petioled, smooth, shining on both sides, cuneate, mucronate, 12 inches long by 5 broad, very distinctly though minutely dotted, peduncles terminal, all the parts of the flower more or less villous. Calyx 6-partite, corolla none, stamens 9, style 1, disk glandular. Larayen.

486. ? *Rom. Acanthaceae*. A small shrub cultivated by the Nagas for a good blue dye which it produces. The greater part of the clothing which we saw in use by men, women and children, had been dyed by this plant, and the colour appeared to stand very well. Leaves opposite, short petioled, or sessile, often unequally paired, elliptic, acuminate, remotely serrate, veins prominent, parallel. Flowers axillary and terminal, lilac coloured, showy, calyx closely embraced by 2 small ligulate bractes, 5-partite fully to the base. Corolla unequally 5-partite. Stamens 4 didynamous, with the rudiment of a sterile filament; style one, stigma incurved, fringed, germ sprinkled with short, glandular hairs, seeds hooked. Larayen.

487. ? Arboreous, bark rust-coloured. Leaves alternate, petioled, oblong, serrated, nearly smooth above, with a few scales on the midrib and veins, densely clothed with ferruginous down underneath, veins parallel and sprinkled with woolly scales. Peduncles axillary, many flowered, flowers rose-coloured. Sepals 5, petals 5, stamens numerous, closely surrounding the germ; germ 5-celled, style 5-cleft. The style is sometimes 6-cleft, and the germ 6-celled. Kamsing.

488. ? An ornamental plant, probably a jasmine. Leaves opposite, very thin, rounded at the base, tapering to a fine point. Kamsing.

489. *Olex imbricata*, Roxb. Kamsing.

490. ? An ornamental shrub, every part covered with soft pubescence, leaves alternate, short petioled, oblong, finely serrated. Sohpai.

491. ? *Nagetinga*. Arboreous. Leaves alternate, petioled, acuminate, serrate, smooth on both sides. Boora Hymung.

492. ? Arboreous, young parts softly tomentose. Leaves opposite, long petioled, unequally paired, cordate, 3-nerved, a little rough above, tomentose underneath. Larayen.

493. ? An elegant little annual plant about one foot high, with white flowers, spotted within side like a foxglove. Herbaceous, erect, leaves opposite, petioled, from elliptic to lanceolate, smooth above, pubescent underneath on the veins and petiole; peduncles terminal, many flowered, calyx 5-partite, segments acute, corolla tubular, 5-partite, fertile stamens 2, anthers double, sterile filaments 2, shorter, germ superior, style one, stigma exserted, 2-lobed. Namsang.

494. ? A completely glaucous climbing plant without stipules. Leaves alternate petioled, oblong, quite entire, distinctly dotted, veins anastomizing within the margin. Sohohai.

495. ? A pretty little herbaceous annual with yellow flowers, every part villous, the hairs in the young plants are often tipped with glands. Leaves opposite petioled, oblong or lanceolate, distinctly serrated. Flowers in axillary and terminal racemes. Calyx 5-parted, segments nearly equal, corolla bilabiate, upper lip much smaller, entire or slightly emarginate, lower lip somewhat 3-lobed, middle lobe projecting and emarginate, throat very hairy and spotted. Stamens 4-didynamous, anthers double, distinct, style one, stigma obscurely 2-lobed, capsule 2-celled, many-seeded. Sonareegong.

496. ? An extensive climber not in flower, every part smooth, leaves alternate, long petioled, undulate, cordate, 3-nerved, unequal-sided. Larayen.

497. ? An ornamental tree, all the young parts softly tomentose. Leaves alternate, numerous, small, oblong acuminate. Casocarea species?

498. ? An ornamental tree, branches, petioles, and veins of the leaves clothed with subulate scales, leaves alternate, cuneate serrate, serratures subulate, veins parallel. Namsang.

499. ? A large and elegant tree, not in flower. Leaves alternate, short petioled, oblong acuminate, slightly waved, green and shining above, glaucous underneath, 18 inches long by 5 broad, veins prominent parallel, anastomizing just within the margin. Bhedavee.

500. ? A small, but very ornamental shrub, with red and white flowers; every part covered with soft, hairy tomenta. Leaves opposite petioled, lanceolate, serrate, white, with down underneath. Flowers in crowded terminal racemes, or rather spikes, for the pedicles are scarcely perceptible. Bractes scattered, coriaceous, about 3-flowered, calyx tubular, 5-toothed, densely clothed with soft white down, corolla 5-partite longer than the calyx. Stamens 4-didynamous, exserted, 4 times as long as the calyx, Pestil bifid as long as the stamens, germ 4-lobed, ripe seed not seen. *Clerodendron* species? Mohom.

In conclusion, I have to observe, that I have generally preferred giving Roxburgh's names, although I am aware that many of them have been changed since his time. All the native names given in italics are Assamese.

(Signed) J. W. MASTERS.

Sibsagore, 29th March, 1844.

Journal of Captain Herbert's Tour from Almorah in a N. W., W., and S. W. direction, through parts of the Province of Kemaon and British Gurhwal, chiefly in the centre of the Hills, vide No. 66, Indian Atlas. (Edited by J. H. BATTEN, Esq., C. S.)

11th November, 1827.—Marched in the evening to Hawulbagh.

12th Nov.—Halted for Captain Manson to join.

13th Nov.—Halted for coolies, thinking these would prove a difficulty, deemed it advisable to detach him.

14th Nov.—Marched to Dharim Khola about six miles. Road good, almost level, mica slate the whole way, no good examples of strata. Temperature of the river 58, air 68, mean thermometer 48; in the evening making arrangements for the coolies. Dharim Khola-ghur is small but rather picturesque, with a pretty good share of level ground; it contains one other village.*

* The line of march from Hauwulbugh was up the Kosilla river. Dharim Khola is a glen, which joins that of the Kosilla from the West.—J. H. B.

15th Nov.—Marched to Kotlee three hours, road distance about 8 miles. On ascending from Dharim Khola, granite of the crumbly type passing into gneiss. Road ascends to corner about 400 or 500 feet; descends to Bumunee-God under Majhera. Gneiss inclining to granite the whole way. No fixing the strata. Road up Bumunee-God to Kehera-ka-rao. The gneiss to Kotlee. Road level almost, and country beautiful; a valley falls in from the right, East*.

16th Nov.—Muhurgaon; the distance was shorter to-day owing to the sepoy's mistake, about two hours, five or six miles. The road leads up the Cosillah at first along the side of the hill, then descending to cross the river continues along a fine level piece† of some miles in extent, and half a mile wide, the whole of it apparently carefully cultivated. Ground preparing, for wheat has been sown in the cold places. Three villages on a steep to right: Neera, Lowrap and Soomket, three miles from camp. Tauna Suzowlee to left on the rise of the hill, four miles from camp. Opposite Phuleea, a Joodish village; about four and half miles, a valley falls in from right. Turn up and encamp at Muhurgaon. Scenery picturesque; road generally level.

The rock at starting was gneiss, of an anomalous character, having apparently taken in clay slate as one of the ingredients. This rock then extends from Dharim Khola, to the east and west; I suspect it has considerable development, and will open out a new feature of enquiry when properly pursued. Nos. 5 and 6, gneiss. No. 7, a cherty rock, a sub-granular quartz rock. It succeeds the gneiss. It is very abundant in this quarter, and forms imbedded nodules in the gneiss. It is the rock at Mala, occurring there intermixed with clay slate.

4h. 30m. 25.446; 66, 64, 65, 70.83.

17th Nov.—Register thermometer at 33 (sp.) 84 (mercury) covered with dew. Hoar frost in all the hollows; road easy of ascent at first along

* This comes down from the Gunnanath ridge which divides the Kosilla, from the Sattralee valley and the Chana Biloree valley on the Bagesur road. At Gunnanath, Hustee Dull, the Goorkha chief, fell in battle with the English troops, 1815.—J. H. B.

† This is the Somesur valley on the Kosilla. There is a beautiful grove of deodar pines in the middle of the valley, shading a pretty temple. The villages in this vicinity are very fine, with some large white houses scattered here and there, nearly all belonging to families of Joshee Brahmins, the dominant tribe in Kumaon.

side of hill, latterly more steep to Geera Cheena. Bar. at 10h. 24.48, Th. 60.54. Then a steep and bad descent to camp. Splendid view of peaks (snowy) from Pass. The following villages: Dhoom right bank; Bhurur ditto; Chour left; Nakot right; Ujhura, Buseráree, Noukoora, all together right bank. The valley begins to narrow here, and there are no villages beyond. Our tent occupies the site of an *augur*, or village of iron-founders, which was formerly nearly at the head of the valley, and received its ores from a mine above the Khuree* copper ore. At starting, No. 8, a reddish quartzose slate verging on clay slate; No. 9, true clay slate, a thin layer; No. 10, the quartz rock under; No. 11 limestone at Nakote, silicious, I believe. These are the same rocks precisely as are found on the Suttralee road to Bageswur, and there also they succeed gneiss, which is found extending nearly from JáK Bhetoolee to Thakoollee; also at Ramesur, on the Surjoo, the same succession occurs, and in the Ramgunga. No good indications of strata; the covering of debris is thick on these hills, which are of the rounded form; even the outline fails to detect the dip. The scenery was picturesque—4 p. m. 25.148, 61.5, 56, 48.5; 64 max., 41 min.; sunset at a quarter to 3.†

18th Nov.—No. 1, 1753; No. 2, 1754; No. 3, 1755; No. 4?

16th Nov.—No. 5; straight laminar gneiss containing something between talc and mica, might be called argillaceous gneiss perhaps, as the mica is like clay slate. No. 6, a better defined gneiss than the preceding, straight slaty, contains more felspar and perhaps chlorite. No. 7, very fine granular brownish quartz rock, Muhurgaon.

17th Nov.—No. 8, quartz rock passing into clay slate, red slaty, composition granular. Beyond Muhurgaon No. 9 olive-colored fine earthy clay slate, sub-schistose, Bhýnsur. No. 10 quartz rock, reddish olive, a layer or veins in preceding ditto. No. 11, blue limestone with white veins, Nakote. No. 12, white compact dolomite? or silicious limestone, Nakote.

18th Nov.—No. 13, 1765, large crystalline granular dolomite, Doba.

* The Khuree copper mine to East of Capt. Herbert's route is passed on the road from Almora to Bagesur.—The ores are very good, but the mine is not productive, owing to the difficulty of working the soapstone rock, which is always falling in.—J. H. B.

† No miracle, but owing to the Western hills.—J. H. B.

No. 14, black talc slate. No. 15, 1767, granitic talcose quartz rock above confluence with Gaomuttee river.*

Marched to Dangun, village on confluence of a stream with Gaomuttee river; rocks very little visible, at first small patches of dolomite crystalline granular, intermixed with black potstone and black potstone slate. Then a large tract of compact quartz rock, and latterly of granitic structure, similar to what I have obtained in the Ramgunga and at Punnae.† This is a curious rock, and well deserves a name.

The road was an easy descent the whole way. Very little cultivation, except at Doba and about half way below Jowkande. Here there is a fine wide valley well cultivated. The Gaomuttee is a large stream, even in this month it is about breast deep. We crossed it by a *sunga*. Umsaree Kot-ka Gudhera is the name of the glen we came down from Doba. The village is below Jowkande. Sunset at 4 P.M. Ther. 73, min. 57. Dry 9 cylind. 13. wet 27, 4 P. M. 26.878, 77.5, 72.5, 58.76, max. 34 dew.

19th Nov.—Umtola and Kholee, two pretty white villages on opposite sides of a glen that comes down parallel to that of Doba. Mohot $1\frac{1}{2}$ hour on left bank, fine deep place in the river like a small lake, about 2 or 300 yards long. Rock, which has been something of a gneiss, changes here to a hornblende or chlorite schist, a compound rock. Path generally good, with easy ascent along left bank. The rock is distinctly stratified in many places, generally the strata are vertical. Here the dip to North at an angle of 56° . The rock changes to the type No. 15, and continues all the way distinctly stratified, dipping near 20° N. W., with a high angle (50°). Road passes into a feeder of the Gaomuttee, and then back again over the side range without ascent to the parent valley. A Jood village on right bank. Encamp in bed of river about $3\frac{1}{2}$ miles beyond. Time 3 hours = 9 miles. One or two difficult rocky places.

The valley is as yet narrow, except here and there for about $\frac{1}{2}$ a mile or so, and then even of no great width. In some places the

* Great care should be taken in the Museum to compare Capt. Herbert's descriptions with his specimens. The mineral characteristics will at once shew to what series his numbers on the specimens refer. No. 11 is also 1763, and "Blue limestone with white veins" will at once shew its difference from any other. No. 11 is another series.—J. H. B.

† The fine valley of Punnae, on the Aluknunda between the Dhunpoor and the Pokree copper mine mountains.—J. H. B.

rocky banks almost meet. Features of this kind inevitably excite the idea of the gradual development of a river's course, and the previous formation of many lakes. 4 P. M. Bar. 26.476, 61; 59; 51.5, max. 72. River 56.8. Tent 61.54. Outside 59.51.5.

20th Nov.—Marched to Poorena, about 6 miles. At 35m. Kunsaree, a deep pool in the river bed. Rock dipping S. E. A little further, valley opens and presents a fine sloping surface of some extent. The whole covered with jungle grass, with the exception of a few fields here and there; few villages visible. Cross a small stream near camp; gneiss dipping to N. direction, N. 80 E. 4 P. M. Bar. 26.286, 72, 67.5, 54. Byznath about 1½ mile on the Gaomuttee. The confluence of the Guroor close to this.

21st Nov.—Nowgaon. Road not so good to-day; to Nowgaon about 6 or 7 miles. First part level, leaving Goamuttee valley and following that of the Guroor, picturesque valley, the former looking towards Runchoola; strange that such a fine valley should be so ill cultivated, or rather uncultivated. Here and there a field in the middle of the jungle grass, indicates perhaps the commencement of a different state of things.*

Gurser Lillu, 2 villages. Puchunna to right 50 miles. Geonace to left 90. Babbartola right a little back. Rock a chloritic schist, dips N. E. 20°.

Ghersun-ka-khola, } .. 100 min" to right.
Kot-tulwaree. }

4 P. M. Bar. 25.686, 66, 59, 50.

No. 16, 1768, a schist of an anomalous character, perhaps a gneiss. Yellowish grey. Close to camp being like the rock near Ramgurh.†

No. 17. Talcose gneiss? the Punnae and Ramgunga rock.

No. 18. Chlorite or hornblende schist.

No. 19. Talcose schist. No. 17, but with straight laminar structure.

20th Nov.—No. 20. Gneiss bluish-grey, approaching to mica slate.

* This valley, now called the Bijnath valley, is the largest in Kumaon, and although 3,500 feet above the sea, no cultivators can remain in it on account of its insalubrious climate. It was once thickly peopled, and at Kuthoor and on the Runchoola ridge which stretches into the valley, was the seat of the ancient hill dynasty, called the *Kuthoor Rajahs*, now quite extinct. Ruins of temples, cutcherries, chabautras, &c. some of them beautifully carved, abound hereabouts.—J. H. B.

† Ramgurh, between Almora and Bhamourse.

21st Nov. — No. 21. Olive green chlorite schist.

No. 22. Dark green ditto.

No. 23.* A vein of gneiss in preceding, a beautiful rock.

22^d Nov. — To camp in jungle, owing to the stupidity of the sepoy who went on. We had a hard day's work of it, the ascent to the Pass occupying 5 hours, the first few miles were easy with good road, but the latter was for the rest of the way very bad, chiefly in the bed of a torrent, Guroor-Gunga, which we crossed and recrossed about one dozen times. Latterly, leaving its bed, the road ascends one of the spurs thrown out by the high ridge, when it improves a little. There is, or was, a pool on the top of the ridge where we expected to find the camp, but had to descend about a mile on the western side, where I found breakfast prepared, but no ground or place fit for a tent. After breakfast, went on 2 hours farther, the descent most steep, and in many places even dangerous. At last, we came to a tolerably level spot where was water, and where I pitched for the night. An extraordinary feature in this descent was the deficiency of water even where the ground was a little level. Barometer on the Pass, 22.82; 54, 49, 40, at 11 A. M.

The rocks, as the preceding days, anomalous, sometimes verging on gneiss, sometimes on chlorite slate, but most generally quartz rocks, all the fragments too, of which there are an immense number, both on the ascent and descent, belong to the last named species. Very few examples of strata, or indeed of the rock in situ at all. One on the ascent was observed N. 60 E., (direction N. 30 W.), angle of inclination 75. A wild bee's nest was observed, which had been robbed by a bear or other wild animal. The bee is of a different species from the cultivated, much smaller, and marked with yellow rings. It is said to be much more vicious; the domestic bee seldom or ever stinging, the other severely. The cells of the honeycomb were hexangular. This is the third species of bee I have observed in these hills.†

* This should be 1775.

† This Pass is over the Bhutkot and Pinnath range of mountains, visible N. W. from Almora, very high, from 9,200 feet to 7,500 feet above the sea.—J. H. B.

‡ It is somewhat strange that Dr. McClelland in his "Enquiries into the Geology of Kumaon," blames the people for using only wild honey instead of domesticating the bee. Nearly every house in the province has *bee-hives*, and the honey is excellent in some places, and a profitable article of trade.—J. H. B.

23rd Nov.—To Turrak-ka-tal. Our yesterday's march having kept the people on their legs all day, and allowed but little time for their meals; made a short one to-day to Turag-ka-tal, an open spot in the bed of the feeder of the Ramgunga, which though now dry, they say, in the rains becomes a lake. Distance about 5 miles, road at first more steep, afterwards less so; a descent the whole way, and mostly good, very little rock, the fragments always the talcose granular quartz rock. Found the Englefield barometer out of order to-day, and obliged to open the cistern. A large bubble of air had got $\frac{3}{4}$ up the tube, readjusted, but without boiling. It is evident that the Englefield barometer unless checked by another, is of no use.

8-45, P. M., 26.100; 64, 61, 49.5 sunset. Set watch at 12 by Theodolite.

22nd Nov.—No. 24. A thin slaty gneiss, bluish grey, dirty.

No. 25. An almost compact fine grained quartz rock, contains most probably felspar. This is the rock of which the dip was observed.

No. 26. Large grained talcose quartz rock, with very little appearance of stratification. The Ramgunga and Punnaë rock.

23d Nov.	} These specimens anticipate the Journal by four days.—J. H. B.	No. 27. A green (chloritic) gneiss, sublaminar.
24th „		„ 28. Limestone, Turag-ka-tal.
25th „		„ 29. Gneiss, straight laminar.
26th „		„ 30. Quartz rock.
		„ 31. A tender mica slate passing into gneiss. It certainly contains felspar, ascent from Sohngaon.
		„ 32. A true gneiss, silvery mica, top of ridge.
		„ 33. Ditto.
27th „		„ 34. A mica slate or gneiss, brown. Bed of Benee Gunga, or Bino below Ooperara.

24th Nov.—To Bural near Doluree, along the level plain, which in the rains becomes a lake, and therefore called Turag-ka-tal. It is almost shut in to the West, which is the direction of the glen, by a low ridge of limestone which runs across the valley, leaving but a narrow opening for the discharge of several streams, which even at this season take their rise here. This ground though remarkably even, is not I think quite level, having a fall to West, as proved by the streams which have a considerable current. The whole length is between two and three miles, and the breadth at the widest about $\frac{1}{2}$

to $\frac{1}{2}$. The soil appears excellent, and is partially brought into cultivation. In the rainy season the depth is said to be such, that some tall trees, which are situate about the middle, are completely submerged. The extreme steepness of the mountains which surround it, must carry down their supplies quicker than they can run off; and in this way has a deep and rugged glen been filled up with silt and detritus, and converted into a fine level piece of ground; doubtless the surface will continue to rise till the waters find a wider outlet over the top of the limestone ridge already noticed, which is not many feet above the present surface.

The descent from this ridge is considerable, the difference of level between its top and the bottom of the glen being four or five times what it is on the side of the lake, a proof that the latter has been raised considerably. After descending, there is a good deal of level ground, and the path is pretty good, with the exception of occasional boggy places which are troublesome. The road after leading down the glen, enters the bed of the Ramgunga* with such a straight continuity of direction, that though I was on the look-out for the meeting of the two vallies, I did not observe it, and was surprised to find myself encamped on the bank of the latter river. A very extensive piece of level ground occurs here, and it is well cultivated; a fine valley appears E. or S. E., very wide and very level, no rocks were visible, but limestone more or less pure. A good deal of it was seen in the bounding ridges to right, as indicated by the black and yellow precipices.

25th Nov.—Sohngaon; road excellent to-day, level the whole way, the march a short one, being Sunday, about 5 miles. Down the Ramgunga, the bed of which is here a noble plain of many miles in length, and upwards of $\frac{1}{2}$ a mile in breadth in some places. Left the village of Nagadh to right in a little glen of 1 or 2 miles. Crossed the river and ascended a larger glen, which though of some extent, is said to lead back upon the Ramgunga, or rather upon the

* Care should be taken not to confound this Ramgunga which, rising in the central hills, flows to Moradabad and Bareilly, with the Ramgunga which rises in the snowy ranges and joins the Surjoo river at Ramesur, a few miles from the junction of the latter with the Kalee river.—J. H. B.

Kutsaree* stream. No rock visible, but one which seems to be a gneiss of very flat laminar structure. In this glen appear some strata dipping to W. N. W. at a low angle (30°) quartz rock. We have in this valley a fine section of the bank, exhibiting distinctly the manner in which these level pieces are formed. Three strata appear distinctly marked, perfectly parallel to the present surface. The lowest consists chiefly of very coarse gravel. The second is a fine silt or mud, with scarcely any gravel. The third, or uppermost, is like the first, but the gravel rather smaller, and more earthy towards the top. These three divisions are most distinctly marked.

26th Nov.—Camp above Jynta, ascent to lateral ridge, path good and easy. Then along face of ridge with a view of the Ramgunga, and that most beautiful flat in its bed nearly 10 miles† in length, cultivated every inch of it. Opposite appears Nythana fort, it bore 5° S. E. from the top of the ridge. Mica slate is the rock all the way to the top of the ridge. A patch of the gneiss found near Almorah, and on the road from Dooara Hath to Palee then occurs. Day cloudy. 4 P. M. 24.835, 65.5, 58, 50.

27th Nov.—To Goorja Chowra below Ooperara $3\frac{1}{4}$ hours, about 10 miles. On starting, accompanied by gneiss. Path good, oblique, ascent along gentle slopes thinly covered with Cheer pines. Summit of the ridge,‡ a fine level piece, picturesque spot for a house, water close, with plenty of fine timber. Descend obliquely along smooth grassy hills, excellent road winding round a glen. Pass a village just established (last rains,) cross over a low ridge, and come down upon Ooperara. This part not so picturesque, or path so good. Every where gneiss. Descend from Ooperara to the Bino path better gneiss, but of a different type, small grained, grey and approaching to mica slate. Encamp on bank of river, which here re-

* The Kutsaree valley, six miles long, and from half a mile to nearly a mile in breadth, joins the Ramgunga from the north at Gunnai. It is beautifully cultivated, and the surrounding mountains yield the best iron ore (chiefly red hæmatite,) in the province, and here are the most extensive iron mines.—J. H. B.

† This part of the Ramgunga valley is the richest portion of Kumaon, and forms with other fertile tracks, the pergunnah of Palee.—J. H. B.

‡ This ridge is called Jowrasee and Doorga Dhee, and would be the finest position for a large town in the whole hills.—J. H. B.

receives another stream from East. *Dheeghat** is below, about two or three miles. Encamped there in my Sorenugur journey. This was one of the most pleasant marches we have yet had. Cloudy all day, and now I think threatening rain. 5 P. M. Bar. 26.595, 64.

28th Nov.†—To Paton, steep ascent of an hour and a quarter. two patches of gneiss run down the hill, as indicated by huge blocks scattered over the surface. Pass through Bhumoree. Khyldora nearly opposite camp and a little above. The following is a sketch of this river valley. (*See plate No. I.*)

After ascending to separating ridge between Beonee and Bino rivers, the path leads along the summit nearly level. The whole of this ridge, at the summit at least, is gneiss, occasionally passing into granite. Many of those huge blocks curiously supported are observed, similar to those at *Dhee*.‡ This is an appearance I believe characteristic of granite. Day excessively cloudy, and threatening. The sun has not now been visible these three days; huge banks of clouds are collecting towards the plains. It appeared to be snowing on the Jowahir peaks, of which we had a glimpse this morning. 4½ P. M. Bar. 24.512, 57.49, 40.5.

29th Nov.—Rained all day, a most miserable day.

30th Nov.—A good deal of rain on the night of the 29th.

1st Dec.—To Dyra, morning truly dismal. Towards 10 o'clock a few gleams of sunshine, which tempted me to move for Dyra. The road was tolerably good, being an easy and uniform ascent, the time was four hours, about nine or ten miles. The rocks I think gneiss; the specimens 1 and 2 are hardly doubtful. They are small grained, grey structure, sub-schistose. No. 3 is a kind of granite containing schorl. No. 4 a semi-transparent quartz rock. In a small patch of mica slate, remarkably tender, containing veins of quartz; the latter though possessing all the aspect of the hardest specimens, yet broke between the fingers.

* Dhee Ghat, a fine valley below the junction of the Bino and Beonee rivers, tributaries to the Ramgunga.—J. H. B.

† Captain Herbert here enters British Gurhwal, and leaves Kumaon Proper.—J. H. B.

‡ Dhee-Dhoora, a remarkable spot between Almora and Lohoghat.—J. H. B.

This village is small, rice is not grown, the elevation being too great. Wheat* sown in October and cut in May. At Paton rice is grown. At Almora they sow wheat latter end of November. Half way it began to hail and rain, and continued to the village nearly. Encamped on a delightful grassy and level spot above the village; very cold.

2d Dec.—Last night to my astonishment heard the Almora gun, distance is upwards of 40 miles. I had doubts on the subject till this morning at day-break, when I heard it again.

Lovely morning, not a cloud visible. Hoar frost on the ground, and tent all stiff with it. Temperature at 8 A. M. 41.5 moist, 35.5 glass in shade 85. Bar. at 10½ A. M. 23.005; 55, 44.5, 37.4 moist; in tent 58.47.

At 12 started for Marora. Steep ascent at first, with snow, to good sized temple—Binsur. No account when built, a figure of the bull in front, and iron bells hung about his neck as offerings; trees Deodar, all male that I saw, and kursoo oaks; rocks, gneiss the whole ridge from temple level; after two hours descent begins. Here observed barometer, 2 P. M. 22.13, 54, 41.5, 37. Much snow, and descent very bad; two hours of it to stream with an intermediate small ascent. At stream fine Rons trees or Roons, also Neegalas; † hemp ‡ sown here, and on the ascent to Dyra, which requires apparently a cold climate, was now cut. From river easier descent, wheat fields two inches above ground. Cross Sancee, a little below the confluence of the stream followed on two planks, goodish stream; road up its bed to Sarkot. (High Pass higher than that crossed, by name Doodoo-ke-jolee. (B.) Sarkot a large village with 60 houses.) Small ascent to Murora, village of 50 houses. Many sheep and goats—former little fellows black, with short tails and curly horns; unwilling to sell; hemp soaking; arrived at 5 much fatigued, five hours on road. Gneiss the whole way, in some places so soft and earthy, as to be like the brown tender mica slate of Almora; here

* In all elevated places wheat is sown very early, in order that the young plant may be strong before the frost and snow begin. In one day's march, young green wheat and rice can be often seen.—J. H. B.

† Ningalas, Hill bamboo, only found on high mountains.—J. H. B.

‡ Great quantities of fine hemp are grown in Gurhwal by the lower caste of Khusias. The Kumaonees have a prejudice against growing it.—J. H. B.

huge blocks of a hard and porphyritic type, like what I observed on the road to Mason. 11h. 40m. A. M. Barometer 24.070, 61.55, 45.5.

3d Dec.—Halted.

SPECIMENS.

28th Nov.—No. 35, 1787, gneiss well defined, summit of ridge dividing Bino from Beonee.

1st Dec.—No. 36, 1788, a brownish grey gneiss of a fine grain, passing into quartz rock.

No. 37, 1789, ditto less like quartz rock, more like mica slate.

No. 38, 1790, an amorphous granite gneiss, containing schorl disseminated light buff.

No. 39, 1791, pure haloidal (milk) quartz.

2d Dec.—No. 40, 1792, reddish-brown gneiss, summit of ridge.

4th Dec.—Murora to Bugwaree 3 hours; 5 P. M. barometer 24.422, 62, 54, 44. High peak bears 93 N. E., road very bad to-day at starting, and for some miles leading up and down through and over huge block of gneiss, scattered about in every possible variety of confusion.

At two hours descent to bed of stream here called Seons* as well as Sanees, receives the Nana-gad from the west. Brasee village left bank, Goree right bank, then gradual ascent to Bhugwaree. Encamp south of it about half or three-quarters of a mile.

Cloudy again; gneiss the whole way, but very seldom visible in situ, never in strata. Huge scattered blocks, sometimes tender like mica slate.

5th Dec.—Bhugwaree to Gunguon three hours or more. The road to-day was a general descent, but very uneven, continual ups and downs. We have come down, however, about 1000 feet altogether.

At $\frac{1}{2}$ an hour ran 58 S. E. At $1\frac{3}{4}$ Kunyoor. At 2. Descent to bed of Seons or Sanees, rather of its feeder, just above confluence. A very

* Sanees river rises at Doodoo-ke-tolea mountains, and after receiving the Chippala from Chippulgat, joins the Ganges under the name of Nyar river, 30 miles above Hardwar.—J. H. B.

pretty spot. The whole descent from Kunyoor* was pretty. The path then ascends again and continues alongside of mountain, then descends to cross the river knee-deep, and again crosses close to camp, which is on a fine grassy level with the river close by our door. Splendid pools for bathing, six to eight feet deep, and 40 or 50 feet long. The tributary stream is that crossed in the Sreenuggur trip on the march from Kunyoor.

Rocks to-day at starting, gneiss, more or less well defined. At Kunyoor perfect, with much granite, also probably veins. The latter contains schorl; much of the granite was so soft, that it might be dug with a spade. On descending from Kunyoor, the mica slate with garnets were found near Aeën, which is also on the border of a gneiss district. Latterly approach towards chloritic and argillaceous schist; no good examples of strata any where, as usual the more perfect gneiss district covered with huge blocks so characteristic of this rock. A cloudy day.

5 p. m. Bar. 25. 315, 62, 52, 48.

6th Dec.—Halted, strong hoar frost during the night. Ghursaree, Punna, Kolinda Godee-gad and Babta.

7th Dec.—Hoar frost from Bindhelee to Jawace, 3½ hours, road very uneven and baddish, ascend to ridge and descend to Ghursaree 1 hour, Punna, opposite high, ascend to Kolinda 1h. 45m. and to ridge 2 hours, wind and descend to Godee-gad, join Seons 2½ hours. In river bed to village, latterly small ascent.

The rocks to-day schists and quartz rock, being the same series, and accordingly every variety of compound between their extremes is found. The schist is sometimes inclining to chlorite schist, sometimes to argillaceous, but I think always inclining to the character of magnesian, indicating the presence of talc rather than mica as the schistose constituent. Near the village, a nucleus of greenstone desquamating in crusts, just like the granite at Dhee in the neighbourhood of the amorphous mass strata of the same rock, with more or less contamination of quartz. The views suggested by these facts, full of interest, require development.

* Kunyoor is three quarters of the way from Almora to Sreenuggur, and was once a Thanna and Tuseeldaree. The Senior Assistant Commissioner in Gurbwal has a bungalow here, and the roads in its neighbourhood in every direction are now excellent.—J. H. B.

SPECIMENS.

4th Dec.—No. 41. Perfect gneiss grey, contains garnet and schorl.
Murora to

5th Dec.—No. 42. Small grained dark grey gneiss.

No. 43. Small, oscillating towards mica slate.

„ 44. Large grained granite, Kunyoor.

„ 45. Small grained ditto.

„ 46. Schist, talcose? or micaceous, like the rock at Aeena.

7th Dec.—No. 47. Talco-quartz, argillaceous schist, greenish grey.

No. 48. Talco-quartz, greenish grey.

„ 49. A curious quartz rock.

„ 50. Still better defined talcose schist, bluish grey.

„ 51. 1803, [1752*] Greenstone, amorphous, desquamating in crusts.

„ 52. 1804. A greywacke sub-schistose, micaceous, argillaceous quartz rock, (greenish.)

„ 53. 1805. Ditto, grey light.

„ 54. 1806. Argillaceous quartz rock, dark-bluish.

8th Dec.—4m. 10h. 25.775, 66.5, 61.51. A short march to-day owing to mistake.

Quartz rock of various types, *i. e.* more or less impregnated with the green constituent, direction 800 S. E. dip. to E., passed through Sookhaeö. Encamped at Muteeala. Usal-gad and Meets Seons from East.

9th Dec.—4 P. M. 25.857, 68, 65, 55. Partially cloudy, a short march of 2½ hours, cross Usal-Gad at starting, along river side, ascend to Pass above Lachee village in lateral glen, (E. side.) Descend passing through village, come down glen, and enter valley of the Saneé again. Down the same passing Hurkandee, which is on the right bank. Encamp at Bhungär and Nowgaon, latter left bank, former opposite.

Rocks to-day fine greywacke slate and quartz rock, passing into greywacke with every possible mixture of these rocks. Direction whenever observable, North and South, strata nearly vertical, but

* I do not know what the No. 1752 refers to, the series No. 1 of this Tour is 1753, vide subsequent note, sheet 7; 1572 must be added to all Nos. of this series — J. H. B.

dipping to W. A plant here used as a *turkaree*, bears black berries, sown.

10th Dec.—Nowgaon to Chundolee. Descend and cross river along flat to Bhungár about 15 miles, fine peepul tree. Above Nowgaon Seeonsee, 1 hour to Sera. Bhakund-Purind; one and quarter to Munjee. Above is Chundolee, opposite Domgla, large village, road generally level, except last place steep ascent. River takes turn here. Rocks, quartz rock, passing into greywacke. Therm. 64° to 39° covered with dew.

11th Dec.—Chundolee to Syndhar, gentle ascent up side of hill, oblique, $\frac{1}{2}$ an hour. Usoor Gurhee* to right high up, 50 miles to Neelee, 65 to Myla, latterly ascending. Ascend Pass, descend to stream and ascend to Kylmar. Descend again and ascend to Syndhar which is in a lateral glen, and away from the Sanee. Rocks more inclining to greywacke slate latterly. A good deal of very red earth here; houses painted. Hills remarkably bare. 5. P. M. 25.535, 64.5. 56.52. soon after 52.2, 51. Opposite Neelee is Choundool.

12th Dec.—Thermometer min. 41, general fog. Up glen good road and easy ascent, one hour to breakfast, as it was stated Soonkolee, the first village, was a long way, and no water procurable beyond this point.

Rocks, the argillaceous quartz rock and greywacke slate, the reddish type; fog still in valley at 10 A. M. Air 52, moist 50, in the shade of a tree 49 46.

Another observation gave in the tree shade 52.5, 48.5, and in the sun 66.5, 56. Here the point of deposition must have been the same, as the thermometers were kept nearly in the same spot.

After breakfast proceeded one hour ascent to Pass. Bar. at 12 or a little after, 23.935, 53, 52, 45. Lungoor† bearing by needle 275° 54'.

Depression,	..	..	..	...	..	15.20
R.	...	..	..	..	..	6.20

10.50

* Usoor Gurhee, one of the numerous hill forts with which this frontier of Kumaon and Gurhwal is studded. Joonia Gurh, Gunnea Gurh, Goojroo, &c. &c.—J. H. B.

† Lungoor fort, a conspicuous place in the South of Gurhwal, not far from the plains at source of Kohriver. Here the Gurhwal Raja held out for some years against the Goorkhalee invaders of his country.—J. H. B.

A remarkable isolated spreading hill, 295° . A high hill with broad top $824^{\circ} 43' - 12\frac{1}{2}^{\circ}$ E. + $4\frac{1}{2}^{\circ} = 17$ —steep descent from Pass, afterwards easier. One hour to Nowgaon. Soonkolee about $\frac{3}{4}$ mile further, total 8 hours, and good road. From the Pass down greywacke slate, with frequently a talcose aspect on the laminar planes, remarkable for splitting in the direction of the lamina, and for breaking with a sort of cleavage across them.

13th Dec.—Ther. to 58° at 1 P. M., 5 P. M. 25.255, 61.5, 57. 56.5 52. Cloudy. Nowgaon to Liresa on the left bank of Muchlad, $2\frac{1}{4}$ hours, about 7 miles, road good. Ascend and descend several times, passing by Musmoor and Poktar, latter up a nulla, which falls into Muchlad. Rocks greywacke slate, olive bluish, &c., much of the red colour. Cloudy and I fear snow. Present dip= 47 , so far good. Hill uncommonly bare round.

14th Dec.—Ther. 41 minimum. Heavy dew, steep descent to cross Muchlad, a middling stream. A very crabbed ascent, wind round glen to right and descend a little to Khergoan.

Greywackes late the whole way, some appearances indicating the passage of this slate into chlorite slate and talc slate. Another peculiarity is the nodules of quartz or amorphous masses, also veins of every shape and size.* It has often struck me, that quartz is the granite of the clay slate and greywacke formations.

15th Dec.—Cloudy with partial gleams, time of marching $2\frac{1}{2}$ hours. Descend to stream and ascend, wind round to Kande village on hill. Descend to stream, steep ascent, and wind round to right to Dang, part of Binjolee. 4—Bar. 25.665, 66.59, 51.5,

Occasionally cloudy, rocks to-day the same greywacke slate, very smooth and shining laminæ. Often breaks into prismatic fragments; here the slaty structure predominates, and I think excellent roof slate might be found, perhaps even writing slate and an inferior whet slate.

16th Dec.—Ther. min. 44. Cloudy morning, a long, and fatiguing march to Chamasee village on flat banks of Sancee. Steep descent, 3h. 40m. time of march, rocks same as yesterday. Bar. 24.27, 715, 69.5, 67.5, 59.5.

* I have certainly seen slate rocks very much disturbed in the neighbourhood of quartz veins.—J. H. B.

Cloudy, crossed one ridge and round glen, cross a second and descend ; mango trees here, good road. Ther. max. 73.5, min. 50, dew 61.8, cloudy.

17th Dec.—Thermometer 50, dew. Cloudy. Choumasoo to Bud Kholoo, time $2\frac{1}{2}$ hours, level along river bank for two miles through cultivation, one mile to Oaklet, cross river four times, and Chipila, here close by village, once.

Barometer at the confluence of Chippula and Sancee, 9 A. M. 28.16, 62.5, 60.3, 56.5, river 58. Latterly road much obstructed by round stones and jungle rock. The greywacke slate continues, but changing a little in character. There are the greenish grey beds too which distinguish the junction of this formation and the sandstone. The rocks are in fact exactly like what we have above the Buleea,* and also above Bar,† color purple-blue, more rarely olive, cloudy day ; the max. 72.5. The Chippula is much smaller than the Nyar, the latter is getting a great body ; a road goes to Lungoor from Choumasoo by Koolharoo.

SPECIMENS.

10th Dec.—No. 55, 1807. A greenish sub-schistose, scaly greywacke slate, less of quartz than the preceding ; breaks with a hackly transverse fracture, (structure, bladed ?)

11th Dec.—No. 56, 1808. An undoubted quartz rock, bluish grey, contains little mica.

No. 57, 1809. A variegated sub-schistose, irregularly-bladed greywacke slate, predominant color buff, intersected by veins of argillaceous matter and of quartz.

12th Dec.—No. 58, 1810. A bluish green slate, contains mica, with an approximating appearance to talcose schist, structure lamellar, like an oyster shell.

No. 59, 1811. Ditto olive, contains mica, much nearer talc slate, curved laminæ.

No. 60, 1812. Fine greywacke slate, the scales of mica not distinguishable without a lens ; more talcose, sub-schistose, quite soft.

13th Dec.—No. 61, 1813. Ditto, dark olive, talcose lustre and very soft.

* Bulea, between Bheemtal and Bamowree.

† Barb, at foot of Simla hills.—J. H. B.

14th Dec.—No. 62, 1814. Ditto, olive, still more talcose.

No. 63, 1815. Ditto, amorphous, with quartz almost perfect talc.

No. 64, 1816. Ditto, more inclining to chlorite and quartz. These three were all in the same spot.

15th Dec.—No. 65, 1817. Greenish grey greywacke schist, inclining to chlorite.

No. 66, 1818. Straight laminar olive slate, with talcose aspect.

16th Dec.—No. 67, 1819. Curved laminar ditto.

No. 68, 1820. Purple greywacke schist, scales of mica very visible.

No. 69, 1821. Ditto, more granular and amorphous.

17th Dec.—No. 70, 1822. Purple granular greywacke mica.

No. 71, 1823. Transition to slate.

No. 72, 1824. Fine greywacke slate.

N.B.—These three from same spot.

18th Dec.—Thermometer min. 50, Heavy dew, fog all round and above, two hours to Bilkhet,* where halted on account of rain. The path ascends alongside of bank and turns up glen. Rock as yesterday, cross small stream and ascend; descend to flat and along river. This is rather an extensive piece of ground. Rained all the forenoon but not very heavily, a little thunder and one flash.

19th Dec.—A miserable day, rained the whole preceding night and this day, tent leaking, field where encamped a swamp or rather lake, about 5 inches of rain during the night of the 18th, $2\frac{1}{2}$ as measured by the chillumchee.

20th Dec.—A gleam of sun about noon gives hopes of clearing. I may note here some remarks I made, which may lead to some conclusions. The rain came on apparently with difficulty, at first very gently, then with thunder and lightning, each discharge being followed by a smart but limited fall, which again intermitted, when another flash brought another fall. This continued for many hours, and even through great part of the night. The following day we had comparatively steady rain, though with intermissions, which appeared to depend on change of wind, but scarcely any thunder or lightning. The nearest flash was about 5000 feet.

* Belkhet and Choumasoo are the finest parts of the Saneé or Nyar valley. This country, *Mulla Sulan*, is very uninteresting.—J. H. B.

21st Dec.—Rain at intervals yesterday, and a most bleak and uncomfortable day. This morning universal fog till near 11 o'clock, when it cleared up, and we had a most splendid day to dry the tents, &c.

10 A. M. Barometer 28.22, 56, 51.5, 48.

4 P. M. Barometer 28.09, 63, 57, 51.

Ther. max. 64°.

22nd Dec.—Ther. min. 38.3. Universal fog, cleared up between 10 and 11, start for Dunda Mundee, cross the Nyarhip-deep in a canoe, beautiful scenery, the prettiest spot I have seen this tour. Fine flat. After crossing the river a steep ascent, latterly less so to the Theka Punee. Lungoor to S. E. and not above 2 miles direct distance, a village, Rookuraree, about 1 mile or less, 4 hours and a quarter. Encamp.

Rocks clay slate, *i. e.* greywacke slate intermixed with quartz rock, a patch of limestone, then greywacke and quartz rock. Arrived late.

Thermometer morning 23d, 41° or 2.7 higher than at Bilket.*

23d Dec.—Thermometer 41° at sun-rise. A little ascent to Docarkhal. 8½ A. M. 24.76, 47, 42, 40. Descent rather gradual, two hours to Dewsa. Thence 1½ hour down to river† bed and along in it. Danda Mundee.

Rock on the Pass and below, a greywacke slate nearly allied to talc slate; then mica slate continues nearly to this place. Dip near this N. W., no getting any accurate measures. A good deal of quartz rock the whole way. The mica slate begins just at Dewsa. A small patch of brown rotten mica slate was observed yesterday near where we encamped. Day cloudy.

4 P. M. Barometer 27.13, 63.58, 50.3.

SPECIMENS.

22d Dec.—No. 73, 1825. Bluish grey, fine greywacke slate.

22d Dec.—No. 74, 1826. Purple ditto, less lustre.

No. 75, 1827. An amorphous rock compound, requires examination, two specimens.

No. 76, 1828. A variety of 74, laminæ straighter.

* In the cold weather the mornings and nights in the vallies are colder than the hill tops, and the hoar frost is much more severe.—J. H. B.

† The Koh river.

No. 77, 1829. An impure limestone, veins of crystallized dolomite, two specimens.

No. 78, 1820. A black schistose rock, (carburetted?) It is the same as that mixed with the limestone, and perhaps answers to the gypsum rock, intersected by veins of carbonate of lime.

No. 79, 1831. Greywacke, greenish-grey, contains some merial; lead?

No. 80, 1832. Ditto.

23^d Dec.—No. 81, 1833. A compound anomalous greywacke slate, contains talc, summit of the Pass.

No. 82, 1834. Talcose schist, undulated laminæ.

No. 83, 1835. Micaceous schist, (gneiss?)

No. 84, 1836. Micaceous argillaceous schist near Dunda Munde, curious stain, two specimens.

24th Dec.—Thermometer min. 40°. Cloudy. Ascend to Pass Kunda Khol. Course due West. Descend and ascend, and again descend to Oomulda 1½ hour. Ascend to Pass, course varying from West to South-west. Fine view down small river valley, Sorgaon or Sonargaon. Along ridge level and good path, 1½. Total 3 hours. Descend ¼ hour to Poorangaon. Rain came on.

25th Dec.—Rained all night. In the morning Ther. 37° min. Snow on ridge to be crossed and on other peaks. At 12, gleams of sunshine, start at 1. One hour's ascent to Konda Gullee. Langoor 42° N. E. Yesterday's Pass 18° N. E. (*See plate II.*)

Barometer 2 p. m. 25.245, 58, 46.5, 42.

A little more oblique ascent, and splendid view of the plains. Descend and wind round glen, then descend again to flat. One house and fields. Steeper descent with sandstone suddenly appearing in fragments, the previous rocks having been quartzose greywacke. Limestone and greywacke schist, cross small stream, and ascend to Pudinda. Small village on ridge in sight of the plains. High ridge and curious flat form, peak to N. and N. E. The true serrated stratiform sandstone ridges appear South and West.*

26th Dec.—Bar. 10 a. m. 26.40, 63.5, 55, 49. Miserable afternoon yesterday, fog and latterly rain. To-day appears fineish, but

* At Churck Khal, in this neighbourhood the Civilians of Bijnore have built a bungalow, and the high road from Sreenuggur to Nujeebabad passes by it.—J. H. B.

still unsettled ; start at 10, a steep and rugged descent in great part to Kotdwara, a chowkee and thana, formerly a stockade with regular gate. The Dunda Mundee stream flows here. Kotdwara is on the very first little rise from the plains, a four hours' march.

Rocks the whole way, sandstone with the red and green clay found at Nahun. The uniformity of the sandstone types here is unusual. Hurdwar is by far the most fertile place I have seen, and from the Bheem Gora Pass, a very fine suite may be collected. 9 p. m. Barometer 28.66, 66.49, 48.

During the night rain. They say no road through the hills from here by the Patlee Doon. It breaks off near Dunda Mundee.

27th Dec.—To Kourhea, a short march of 1 hour. As our baggage was almost all wet, and we had been marching rather severely, I made this short march, instead of a halt. Plain road ;—Cross the Kotdwara which goes to left, afterwards the Koh, no water in it. The former a good deal. Map very erroneous.* 11. a. m. Barometer 28.89, 68, 65, 56.5, 81, 65.5, 62.56.

24th Dec.—No. 85. An argillaceous gneiss? Ascent from Dunda Mundee.

No. 86.—A ditto, approaching to clay slate.

25th Dec.—No. 87. Purplish argillaceous quartzose greywacke or argillaceous quartz rock.

No. 88. Siliceous limestone, with veins of calcareous spar.

No. 89. Red and green fine argillaceous schist, very like shale.

26th Dec.—No. 90,† 1842. Sandstone, two specimens.

No. 91. Ditto, softer.

No. 92. Compact felspar?

No. 93. Greenish grey sandstone, approaching to greywacke, splintering fracture.

No. 94. Ditto, argillaceous sandstone.

No. 95,‡ 1752. Ditto amorphous green rock.

31st Dec.—No. 96,† 1752-1848. Argillaceous sandstone.

No. 97,† 1752-1849. Ditto.

* No. 66.—Indian Atlas is totally incorrect in its delineations of the lower hills, and especially of the Patlee Doon.—J. H. B.

† Note by Capt. Herbert.—Add 1752 to all these numbers. This note explains the former insertion of 1752.—EDS.

The Nos. here after 1848, anticipate Journal.—J. H. B.

No. 98.+ 1752-1850. Ditto.

No. 99.+ 1752-1851. Ditto.

No. 100.+ 1752-1852. Perfect sandstone hard, in contact with a loose sand, almost a quartz rock.

3rd Jan.—No. 101 (1)* 1752-1853. Micaceous sandstone.

No. 102. (2)+ 1752-1854. Ditto bluish grey (Surek-a-rao,) Patlee Doon.

No. 103. (3)+ 1752-1855. Argillaceous, reddish, almost clay, with green spots, (to Gurur) Patlee Doon.

No. 104.—(4)+ 1752-1856. (Shale?) compact argillaceous sandstone, greenish grey.

3rd Jan.—Specimens of Nos. 105.—(5) 1752-1857. The clayey type greenish grey.

28th Dec.—Cloudy morning. Kooreea to Tanda $7\frac{1}{4}$ to 8 miles, vile road through jungle, feet quite wet, as if dipped in water, cross a river supposed the Koh, course about South or a little East of it. About 2 miles before reaching Tanda, emerge. Country a little cultivated.

29th Dec.—Ther. min. 44. Cloudy. Day-break 45 from Tanda to Burapoor. A march of 8 or 9 miles through a tolerable country, latterly ascend a table of the red earth and cross the Kotdwara nulla. This place is a middling town with some pukka buildings. It is similarly situated to Kasheepoor just on a rise, the ground undulating. The ascent to it was quite perceptible. Barometer 4h. 15m. P. M. 29.080 67, 5 P. M. 60.55.

30th Dec.—Partially cloudy, a mild morning. Heavy dew on the jungle grass.

To Bheerbhanwala 8 miles, the road through jungle, latterly undulated, so as to have the appearance of small hills. The surface from Burapoor is the hard reddish clay, which bears a resemblance to that of the strata, not only in colour and consistence, but in the small tubercular pieces which form a hard gravel on its surface when washed by the rains. It has the same arrangement of surface as is observable to the westward, that is, of isolated mounds with perpendicular sides and step-like terraces. Whenever a river occurs, this terrace or raised sur-

* Here a new century of Nos. commences.—J. H. B.

face is broke through by a broad and tolerably deep valley. Did not observe any gravel till close to this place. It occurs on the surface, and imbedded also fragments of sandstone. The immediate neighbourhood here is highly picturesque, nor do I know of any similar spot to compare it with. The undulations of the ground are sufficient to constitute small hills, the view is changing every step, the roads are good, and the disposition of the trees extremely varied and agreeable; it is really a beautiful spot.

A great scarcity of water, the beds of water-courses quite dry, the water of the village is obtained from a *gool* or canal. Were it not for this scarcity, I cannot conceive a more eligible spot for villages.

81st Dec.—Bheerbhanwala to Boksha's village. Cloudy morning and threatening rain, a pleasant and good road for about 2 or 3 miles through open forest to Kaloo Shaheed.* Ascend a little to Pass not above 100 feet or 200 at the very most, sandstone. Descend and hold on through narrow tortuous valley, high sandstone hills on either side, cross several small streams. Latterly road more uneven to a comparatively wild valley, with the only cultivation yet seen. A guard is stationed here. The valley appears to extend towards N. 15° E. and also in the direction S. 45° E. The direction in which we have come about S. 40° W. appears closed up. The course in the forest was N. 10° E., afterwards N. 40° E., latterly N. and W. of N., and again E. of N. The valley is even here of no width, not a mile.

A stratum of the red clay (specimen) with tubercular gravel (*kankur*) lying between two strata of sandstone, rendering it more than probable that the red clay so often noticed as occurring in the Turai, belongs to this formation. Observed also earth of various colours passing into this clay or this sand, all of them members of the regular strata. Observed a stratum of very hard sandstone lying on mere sand, so loose that the application of the hammer to the upper and hard rock set the sand in motion. Observed many instances of the sandstone approaching the conglomerate structure, containing pebbles of every size, and always rounded and imbedded, amongst them fragments of the olive coloured greywacke slate. Observed in a rounded piece of sandstone when broken, concentric stripes apparently indicating the

* The Pass of Kaloo Shaheed (so called from the tomb of a saint) is the main entrance into the Patlee Doon over the outer range of sandstone hills.—J. H. B.

existence of nuclei in this rock similar to what are found in granite. Another resemblance it bears is in the amorphous masses it is so often seen in. And if it be distinctly stratified much oftener than otherwise, this is more than is true of granite, or rather gneiss, between which and granite there is the same difference, and no more, as between the stratified and unstratified sandstone. Is not every rock found occasionally unstratified? clay slate certainly; witness greywacke, mica slate; witness quartz rock, limestone assuredly, hornblende slate, talc slate in potstone and greenstone slate in greenstone. If so, then what means the turmoil made about granite, and why is the same rock in this instance to have two names, and so much stress laid on a difference of feature equally applicable to every rock? 4 P. M. 28.95, 68.5, 65, 56.

1st Jan. 1828.—A most dense fog, cleared up at 10. Motee Lani to Khata on the Ramgunga. Course South-east, down narrow valley watered by the Sona nuddee which we crossed several times (9). The sands are washed for gold,† whence its name. Mercury is used to take up the gold, but is again lost in the fire, as they have no apparatus of collecting the vapour of it. Four men working all day will earn two annas. A miserable pittance, if true. Ascend a little and pass through a forest of saul trees, not very thick. Descend to the Khadm of the Ramgunga. Large round stones in the bed of the river, cross, rather wide and half thigh-deep, encamp on east bank, rather a pretty place, fine plain, but of no great extent, enclosed by low hills covered with jungle. Khuta village $\frac{1}{2}$ koss, distance about 8 miles.

Sandstone the only rock. To-day observed the yellow clay alternating with sandstone, and distinctly stratified, though in very thick strata. In another place observed a stratum of round stones overlying distinct strata of the sandstone, and over that, a stratum of the common

* I hope I shall not be considered presumptuous in offering this. Granite *per se* and gneiss *per se*, only differ in regard to stratification; but granite in contact with schistose rocks, and appearing to be erupted, and *altering* the strata into which it enters, causes the *turmoil* to which Capt. Herbert refers. The Himalyan (snowy) range presents examples of gneiss in enormous beds, and of apparently cotemporaneous granite; but it also presents numerous instances of *obtruded* granite, at least as far as appearances go.—J. H. B.

† The gold washing in Patlee Doon is farmed for Government at 25 Rs. per year!

mud-colored clay, both of them with the same inclination as the inferior strata.

From the observations made in this day's march, I have no hesitation in considering not only the Doon as composed of strata of the new red sandstone,* but also the part of the plains lying at the foot of the sandstone hills, and marked by the hard red clay so often noticed. 5 P. M. Bar. 28.975, 69, 62, 57. Max. 75.5.

2d Jan.—Thermometer min. 42. A dense fog cleared up at 9, along by river perfectly level, after which turn a corner over some low stony hills, and enter the Patlee Doon, a very pretty valley, about 5 miles by 2, surface quite level and not only cleared of jungle but of grass, a fine short green herbage. When I say of even surface, I except a bank which runs along its whole length, and as a step divides it into nearly two equal parts. The Ramgunga continues to left at some distance, only one village, Seera-ka-rao, where encamp. Formerly it was inhabited and highly cultivated; but great sickness prevails in the months of Usoj and Bhadon, which carried off the people. This village,† as well as Khuta and Mooteesaul are inhabited by Bokshas, a race who seem to be the same as the Tharoos on the Goruckpoor frontier. The hill people do not eat with them. No rocks visible to-day; traces of wild elephants. Bar. at 4, 28.82, 73.5, 70, 57.79, 69, 60.5, 56.

3d Jan.—Ther. min. 38.5, moist, 37.5. No fog, a great change, dew point from 50 to 36. Heavy dew on the grass. Seera-ka-rao to Gurur 12 miles, people up by 1.

A good road in general, but some ups and downs, three miles was a continuation of the Patlee Doon, and the remainder a succession of narrow flats opening out more or less. Upon the whole it ought to be a fine country, yet there is not a village along this line. A range of low hills shut in the Ramgunga towards the plains. A road breaks off about four miles back which leads through them to Juspoor. There is also a road to Chookoom on the Kosillah; sandstone prevails all the way, and in one of the torrent beds crossed, is seen a fine example

* This may be true, but why refer every thing to the European types? When Capt. Herbert wrote, the Sub-Himalyan fossils had not been discovered. *These* determine the age and the analogies of the range, and not mere *mineral* characteristics.—J. H. B.

† This tract, though still unhealthy, is slightly improved of late in regard to cultivation. The tobacco and turmeric are particularly good.—J. H. B.

of those shattered beds of parti-colored materials which have been noticed elsewhere, specimens were collected. The peculiar interest of these beds is the transition they present on the one side into common earth or clay, and on the other into sandstone. Another remarkable feature is the number of colors often exhibited within a limited space. Reddish brown, greenish grey and yellow are the most prominent. Frequent traces of elephants. Day cloudy.

4½ p. m. Bar. 28.325, 67, 59, 55.

How is it the dew point is again risen to 51?

5. p. m. 28.300, 63, 58, 54.5.

The Ramgunga here takes a bend to N. E., having hitherto accompanied us on a S. E. or E. S. E. course.

4th Jan.—Ther. 49. Moist 46.5. Cloudy and threatening, 10° warmer than yesterday. Gurur to Jumera and Sankra 10 miles; ascent gradual to Aonla Boongee-ka-khal.* Bar. 8½, 27.31, 53, 51, 44. Hills to S. W. highish, sandstone, descend latterly through bed of stream where greywacke slate is found, but the junction of the rocks not visible. Go along a level piece. Ramgunga close, villages Dandree and Kala Khan, latter on N. bank of river, gradually ascend, latterly more steep, below greywacke slate covered with numerous round boulders, similar.

SPECIMENS.

4th Jan.—No. 206, (1)† 1858. Sandstone passing into greywacke to Jumera and Sankra.

No. 207, (2) 1859. Argillaceous sandstone, bluish grey.

No. 208, (3) 1860. Olive ditto, fine schistose greywacke slate.

No. 209, (4) 1861. A greywacke—all the same place.

No. 110, (5) 1862. Sandstone below the preceding.

No. 111, (6) 1863. Greywacke slate, fine olive sandstone in con-

No. 112, (7) 1864. } tact almost.

No. 112½, (8) 1864½. Red earth, white ant hill.

6th Jan.—No. 113, (1) 1865. Same as No. 2.

Numbers in anticipation of the Journal.

No. 114, (2) 1866. Quartz rock, contains chlorite and talc.

No. 115, (3) 1867. The red and green earthy rock.

* Here Capt. Herbert re-enters Kumaon Proper.

† The middle Nos. are merely those of the day.—J. H. B.

7th Jan.—No. 116, (1) 1868. White quartz rock.

No. 117, (2) 1869. Purple quartz rock, contains talc.

No. 118, (3) 1870. Fine dark greywacke slate.

No. 119, (4) 1871. Greenstone.

8th Jan.—No. 120, (1) 1872. Fine greywacke slate, smooth.

9th Jan.—No. 121, (1) 1873. Quartz rock with brown stains.

10th Jan.—No. 122, (1) 1874. Quartz rock.

11th Jan.—No. 123, (1) 1875. Coarse greywacke slate.

No. 124, (2) 1876. Limestone slate.

No. 125, (3) 1877. Schist in contact.

No. 126, (4) 1878. Ditto, near.

Similar to those belonging to the sandstone, and a little higher I discovered a small patch of that rock in situ, I think. Higher up the round boulders disappeared, and nothing but fragments of slate are seen decomposing into a very reddish earth. Descend to a small flat by side of Ramgunga. Sankra village a little above. Slate mountains opposite bank. Very cloudy and threatening. Bar. 4 p. m. 28.13, 65.5, 60, 55.

No strata any where visible. Road breaks off to Chookoom and Chilkra here.

In anticipation of the Journal.

11th Jan.—No. 127, (5) 1879. Fragment, amygdaloid?

No. 128, (6) 1880. Limestone with pyrites.

12th Jan.—No. 1881, (1) Quartz rock.

13th Jan.—No. 1882, (1) Greywacke slate above Kyoonsal.

No. 1883, (2) Above.

No. 1884½, (3) Ditto in the bed of the river.

SPECIMENS OF 12TH JANUARY.

No. 1881, (1) Quartz rock.

13th Jan.—No. 1882, (1) Greywacke slate above Kyoonsal.

No. 1883, (2) Ditto above in the bed of the river.

No. 1883½, (3) Ditto in the bed of the river.

JOURNAL OF THE 5TH JANUARY.

Rained all day. Halt.

6th Jan.—Sankra to Ujolee. Towards noon cleared up, and we started for Ujolee about 3 hours' march, steep ascent and then descend,

and again ascend to village, which is at no great distance from the river. Two remarkable peaks North of the river. The rocks are greywacke slate of the usual colors: olive, reddish-purple, &c. and quartz rock of a granular composition occasionally. This latter rock has an extensive development, but no strata are visible, so deep is the covering of debris over both it and the slate. Very warm when in exercise, particularly in the ascents.

7th Jan.—Cloudy. Ujolee to Hurura $3\frac{1}{2}$ hours. A steep ascent at starting. Greywacke slate olive coloured. Wind round glen with quartz rock. Descend to stream and ascend. Greywacke slate-pass a third glen. Some fragments of green-stone. A very bad road to-day, and the march very fatiguing.

Both yesterday and to-day I fancied I observed traces of serpentine, in union not only with the slate, but with the quartz. rock. Nothing like a specimen of that rock, but slight impregnations; judged of more from color than any other test; see specimens to-day and yesterday. These two days we have entirely left the river* and ascended, it being at some distance to left. High peaks on its North bank. Passed under Goojroo-gurh this morning, where was a Goorkha post formerly. The plains are visible thence. Almost all the high ranges are deep in snow.

4 P. M. 25.775, 52, 46. Rainy.

8th Jan.—Rained all yesterday afternoon, a little hail. This morning fine, with some snow fallen on the high ridges, but not so much as I expected. At noon start for Jak, about 3 or $3\frac{1}{2}$ hours. I delayed much on the road in consequence of the heat. Descend by a moderately steep road by nullah, small; bed full of debris, 50 feet thick at least. Channel cut out of the debris, greywacke slate, steeper ascent to ridge, greywacke slate and quartz rock. A mangoe tree near summit; say Bar. 26. Wind round glen in which are the following villages: Sonkut Bomun, Kotlee, and Hunera. From the second ridge, Indolee bears a little west of north. Ramgunga very tortuous just there, a longish stream joins it with rather a long course, and some level cultivated spots are seen in its bed. Budungurh river is left behind, a succession of small descents and ascents leading round small glens brought

* Ramgunga.

us through a small hamlet to Jak, which is near the head of a watered by no very large stream. Phulsone is said to be in a north-east direction. Bhutronj in a south-east, latterly the slate more to argillaceous.

9th Jan.—Jak to Doonpôt or Doonpo about 3 hours, a steep ascent of about three-quarters of an hour brought us to the ridge, a lateral of which divides the Jak glen from another belonging to the Ramgunga valley, in which are situated the villages of Phulson Kot, Ningrâlee Goojaree Gurhee, &c. Bar. at 12.45, 25.23; 52, 64, 42.

Sungoor Gurhee visible. Quartz rock is the prevailing rock, a singular type on this Pass, vide specimen. Descend from Pass and by a winding and moderately uneven path passing through Ningrâlee, reach the head of the glen at Doonpo Kôt to left. Sonkut is near. This glen contains a good deal of level ground, which is divided amongst the several villages. It has rather more length than the Jak one; nothing but quartz rock with occasional patches of greywacke slate.

10th Jan.—Doonpo to Joshee Khola, about three hours and a quarter, ascent of nearly an hour to Bhertonj Khâl (*Bhutronj*, query?) Bar. 9, 25.03 44, 37.5, 34.5. (*See plate No. III.*)

Nothing but quartz rock more or less argillaceous; the Goojree peaks remarkable, a high ground; they form North of the Ramgunga. This is the separating ridge of the two river* valleys, and it is remarkably low; emanating from it is a much higher one of considerable declivity with little forest, on which are spread the villages of Phulson Kot, &c. Descend to Rânee Bâgh two hours nearly, fine mango grove, certainly not 1,000 feet below the Pass. This is the fourth example of mangoes growing extremely near a Barometrical pressure of 25°. Quartz rock every where, with occasional traces of greywacke slate, latterly micaceous slate.† Down the glen, beautiful morning, and

* The river vallies of the Ramgunga and Kosilla. These Goojree or Goojroo Peaks must not be confounded with those of the same name on right bank of the Ramgunga, situated in Gurhwal.—J. H. B.

† The pilgrims from Buddrinath and Kedarnath after leaving the high mountains, descend the Ramgunga, until they reach the Pass which separates the Kosilla from that river. From Rânee Bâgh on the Kosilla, they follow the river route to Dhikkoles and Chilkeea. These pilgrims do not seem to dread the Terrai climate, for they move down in July and August, the worst months of the year.—J. H. B.

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tolerable road with rather picturesque scenery. Descend to the Peepul Punt glen and ascend to Joshee Khola, a small village. Turket is the other side of the high range that rises to S. E., which only separates two feeders of the Kosillah river.

18th Jan.—Joshee Khola to Dharee, 4 hours, about twelve miles. Descent passing by a village to river bed 40 minutes. The road then lies in the river bed, which for four miles presents a well cultivated and widish valley; a stony piece then intervenes for a few hundred yards, and then there is again an expanded bed, which continues with more or less interruption to a spot on the left bank, opposite to which commences the ascent to Dharee of about 30 minutes.

4h. 45m. Bar. 26.495, 60.58.5, 44.5. Rocks, quartz rock at starting in bed of river, also with greywacke slate, which was I think oscillating towards micaceous schist, a bed of limestone observed at two places, most likely the same. It appeared as if a certain degree of transition took place, for the schist was more or less impregnated with lime according to its proximity to the limestone. The latter at first sight appeared part of the other rock, so little was there to remark in any thing like derangement or nonconformity of the strata. It was only by the hammer (and color) that the actual difference of the strata was to be detected. The limestone contained iron pyrites and veins of white carbonate. It strikes me, that valuable slabs might be found here.

The whole of the Ghagur* range, which here flanks the Kosillah, up is covered with the snow. There is a great change in the weather, which has in fact become inclement. A dreadful wind reigned the whole day; in the morning it was cutting.

12th Jan.—Thermometer 86° 5' a little after sunrise. Dharee to Keonsal 2 hours. Descend to bed of Kosillah and proceed along to Bhojhan at confluence of Koojgyra. Mujhera close to left bank of river. At Bhojhan leave the river and go up the Koojgyra. Latterly ascend to Keonsal, rather steep.

Quartz rock at starting, a curious type (see specimen,) continued some distance. In the bed of the river observed fragments of the curious rocks formerly found near Mujhera. One single specimen of

* This is that portion of the magnificent Gaghur range in which Nynee Tal is embosomed.—J. H. B.

strata enabled me to determine the dip S. E., inclination about 10° . Quartz rock remarkable for the numerous parallel fissures in various directions. Latterly greywacke slate, but no good examples. 4 Bar. 26.32, 60, 56.5, 48.5.

13th Dec.—Keonsal to Munnour 3 hours. Ascend ridge which overlooks the valley of the Suronta; descend obliquely to Kaggur Ghat, which is at the confluence of that stream with the Kosillah. A village, Nowgaon, a good deal of level ground here. The terrace apparently composed chiefly of granite boulders; cross the Kosillah, an easy winding ascent to Munnour, a small village. There is a curious arrangement here, a small peak is on the banks of the Kosillah, and round it is a valley, so that it appears isolated. I think the river must have once run there, and afterwards changed its course.

The transition from greywacke schist to micaceous schist becomes perfect I think in this march. The micaceous schist appears to dip N. W. 30° near Kaggur Ghat, at an inclination of 15° .

As the weather threatened change, went on in the evening to Chipila or Sipla 2 hours, micaceous schist. The strata dipping N. as near as could be determined on.

14th Jan.—Sipla to Almorah* 3 hours; easy descent to confluence of Sowal and Kosillah. Mica slate everywhere, strata dip here N. E. Bar. 9 A. M. 26.657, 52, 35, 33.

Easy ascent to Almora, gneiss or granite nearly the whole way. In the evening tried the temperature in 8 feet hole, air 52° . It was found 54.3, weather threatening snow.

* Almorah is situated on the ridge which separates the Kosilla from the Suwal river. It is only on one side (the NNE.) that Almora can be reached or left without having to cross a suspension bridge over one or other of these rivers.—J. H. B.

NOTE.—It would appear that Capt. Herbert's specimens of this trip end with the mica slate and greywacke series of the Sowal and Kosilla, found up to the bridge over the former river, from which the Almorah ascent commences, and the gneiss and granite appear. No. 1883 $\frac{1}{2}$ being the closing number.

The M.S. Vol. from which this Journal has been copied, contains a diary from 14th January to 7th February, recounting nothing but dismal rainy weather, and ending with a fine fall of snow, and then fine weather.—J. H. B.

*Notes on Nerbudda Fossils. By Dr. G. G. SPILSBURY, H. C. M. S.
(With four plates.)*

[The Editors have again to regret a delay, for which they are, however, not responsible, in the appearance of this valuable paper and its plates. It has arisen from circumstances over which they have had no control, and which have been privately explained to Dr. Spilsbury, to whose invaluable assistance they again confidently look, now that he is on his old ground; and to whose labours they will spare no trouble or expence in doing full justice.—Eds.]

Herewith I have the pleasure to forward a farther series of notes and drawings in regard the Fossil Geology of the Nerbudda, and owing to circumstances over which I have no control, I much fear that this will be the last opportunity I shall have of placing on record any notice of this interesting pursuit, as long before you can receive this, I shall have quitted the Saugor and Nerbudda Agency.

Before leaving this part of the country, I wish to bring before the Society, as far as has come under my observation, specimens of the different bovine and bubuline class of animal fossils, wild and domestic, met with in these districts; for this purpose I have had a series of drawings made all to the same scale, and for which I am indebted to the very able pencil of former communications,

Plate No. 1, is the Bovine series.

A. Skull and horns of the *Bos Gaurus* of the wilds of the Nerbudda.
E. Ditto, of the domestic animal.

C. G. Two specimens of fossil horns, the one little exceeding in dimensions those of the present domestic animal, while the other surpasses in magnitude that portion of horn seen in the skull of B.

B. D. F. H. Specimens of skulls, all fossil. B. and F. having portion of horn attached; that of B. being entirely free from matrix shows the real size, but F. is incased in matrix, and therefore only an approximation to its dimensions can be made. The occipital view of H. exhibits the ridge so characteristic of *Bos Gaurus* of the present day.

Plate No. 2, the Bubuline series.

1a. Horns and os frontis of a wild buffalo from the Mekul Hills about Umurkuntuk, the source of the Nerbudda river.

2b. Skull and horns of another specimen; but in this only the osseous part of the horns remain, the whole of the horny portion having been removed; its locality is the same.

3c. The os frontis of a fossil buffalo, showing the massy breadth between the orbits so marked in this class.

4d. A particular fine fossil skull, and greater portion of horns of a buffalo lately brought in from this neighbourhood. To show its great size, I have added two other drawings, No. 3, on a much larger scale.

5e. Is the ordinary domestic animal.

At the bottom of No. 1, I have annexed three drawings of portions of fossil horns of deer as found on the Nerbudda, drawn upon a scale one seventh of natural size, for comparison with the delineations by that eminent Zoologist Mr. Hodgson, one of them coming very near in its measurement to that figured in No. cxvii. of the Journal as *Cervus affinis*.

In consequence of the remark by Dr. Roth of the bovine specimen, which he thought somewhat like the *Bos Grunniens*, and altogether very extraordinary skull, I have now forwarded, in farther elucidation three more drawings, two (No. 4) being an occipital and lateral view, to show the very small height of the skull, and No. 5, delineation of the teeth of the left upper jaw of their natural size; which I trust will fully show the peculiarities of this remarkable fossil.

With respect to the fossil B. No. 8, delineated in the cxvi No. of the Journal, which Dr. Roth considers as the lower jaw of a species of *Palæotherium*, and suggests either more detailed drawings, or the specimen itself being sent down, I have to observe, that it is not forthcoming, having been sent either to the Museum of the Court of Directors, or else to Capt. Cautley. In No. 4, I have sent a drawing of a lower jaw since brought in, and which in my humble opinion, differs but little from the above, except in being more perfect and of larger dimensions, at which we had unhesitatingly classed as that of the Hippopotamus, in the two last drawings; just below this jaw, *a. b.* are by far the finest and most perfect specimens of a skull of this now extinct animal, as far as India is concerned; *a.* showing the base of the skull with the teeth very perfect, and *b.* the flatness of the occiput, and also the strong bony roof of the orbit.

In conclusion, I beg to remedy an omission in my former notice; viz. that the whole of the fossils delineated in the 117th No., were from the extensive collection of Mr. Charles Fraser, Agent and Commissioner of these territories, whose zeal and industry in bringing to light these hidden treasures of a former age have been unremitting, but crowned with a success that will probably some day delight the eyes of Geologists in Europe. I scarcely need add, that the present series are from the same source.

Camp Dumoh, 6th December, 1841.

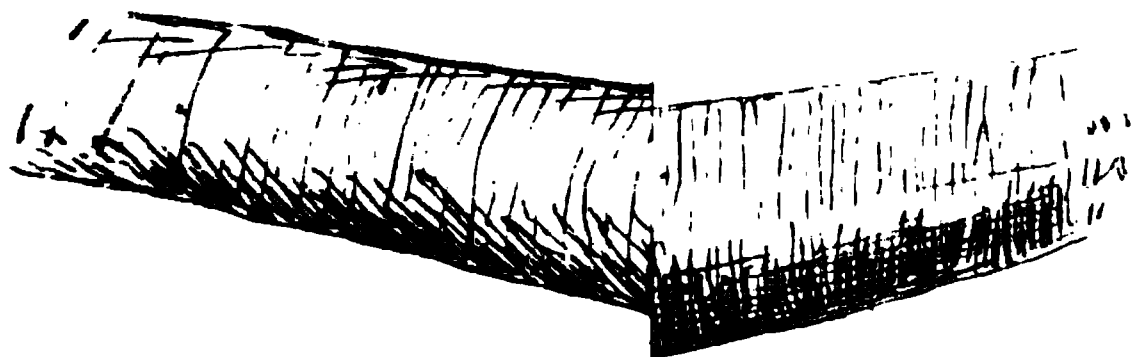
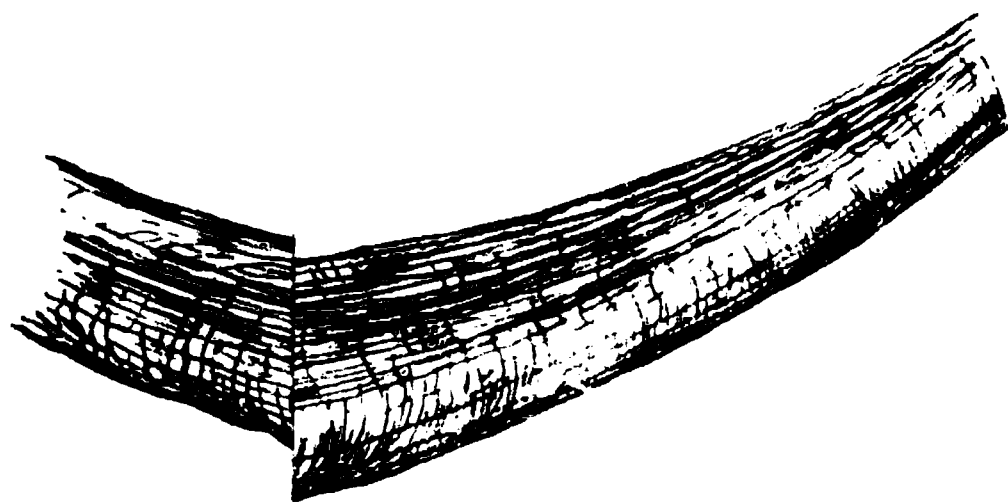
On the Specific Gravity of Sea Water. By J. MIDDLETON, Esq.

C.S. F.G.S.

SIR,—I have the pleasure to send a few observations on the specific gravity of sea water, made during part of my late passage to India round the Cape of Good Hope. I regret much, that derangement of my

* Journ. As. Soc. No. cxvi. page 627.

Nº3.



P.A. Reynolds, Capt. Madras Army

16 inches

N^o 3



hydrometer prevented the continuance of my experiments to, at least, our farthest Southing.

The hydrometer used by me was of great delicacy, and was made for the express purpose under my directions : hundredths, the zero point being of distilled water, 1000 could be ascertained with ease when the ship was very steady, but as this was not frequently the case, I was content to record in my ordinary experiments, only tenths. As the temperature of the sea rose much higher than I had anticipated, the range of my instrument was insufficient, although I managed to extend it. Any person desirous of pursuing similar investigations on the same field, should be provided with a hydrometer ranging from 1022.5 to 1028.0.

Before I had completed my experiments for ascertaining the law of decrease of specific gravity with increase of temperature, my hydrometer became unfortunately useless, so that I have not entire confidence in my results. My doubts in that regard would have been less, did not the law inferable from my experiments differ so greatly from that to which the varying gravity of distilled water under change of temperature seems subject. As I am not aware that the law alluded to has been previously observed, I deem it worthy of statement and explanation here, as well for its own intrinsic interest as for the connection it may be found to bear with the development of heat and electricity, relations which I have not the opportunity and facilities at present to consider. For this purpose I shall quote from the tables of specific gravity given by Berzelius, Lehrbuch der Chemie, 1843, p. 382, (the two left hand columns are those quoted.)

Temperature Cen- tigrade.	Greatest density l.	Differences, First order.	Differences, Second order.
16	0.9992260		
17	0.9989752	0.0001508	
18	0.9988125	0.0001627	0.0000119
19	0.9986387	0.0001738	0.0000111
20	0.9984534	0.0001853	0.0000115
21	0.9982570	0.0001964	0.0000111
22	0.9980489	0.0002081	0.0000117
23	0.9978300	0.0002189	0.0000108
24	0.9976000	0.0002300	0.0000111
25	0.9973587	0.0002413	0.0000113
26	0.9971070	0.0002517	0.0000104
27	0.9968439	0.0002631	0.0000104
28	0.9965704	0.0002735	0.0000104
29	0 962864	0.0002840	0.0000105
30	0.9959917	0.0002947	0.0000107

The numbers in the last column suggest the probability, that those in the adjoining column whose differences they are, increase by arithmetical progression. The differences between the former numbers themselves, sometimes in excess, sometimes in defect, with respect to such as have nearly the same situation in the scale, are attributable to errors of observation. With respect to numbers having remote situations on the scale, their differences obviously decrease with increase of temperature, a fact which would have been still more obvious, had I introduced more of the table than I have deemed it necessary to do. This, however, was to have been expected from the increased capacity of the bottle by augmentation of temperature, if the process for ascertainment of the specific gravities quoted were weighing, or the greater buoyancy from the same cause, were a floating hydrometer used. I am inclined, therefore, to disregard this decrease, and doing so, I take the average of the differences, which I find to be 111. Resuming the preceding table and adopting this ratio, we have

Temperature.

16	0.9991260	=	A		
17	0.9984852	=	A—d.	(d.0001508)	= B
18	0.9988133	=	B—	(d + v) when v.=0000111	= C
19	0.9986403	=	C—	(d + 2v)	= D
20	0.9984562	=	D—	(d + 3v)	= E
21					
30	0.9960037*	=	D—	(d + 13v)	

This gives the n th term, commencing with any one A in the scale, as follows:—

$$N. A - n - 1. d - (v + 2v + 3v + \dots n - 2v.)$$

It will be understood that I have preferred examining the part of the table above quoted on account of the analogy in point of temperature to conditions of my own experiments. I have stated above, that the law of variation of density with change of temperature in sea water, seems to differ from that in distilled water. As has been shown, the latter involves a function of a constant difference and a difference by progression, while so far as my experiments go, the former consists of the constant difference alone. Those experiments were made on water varying in temperature from 60° to 70° of Fahrenheit, and indicated a decrease of sp. gr. of 1880 for each additional degree of temperature. Hence the general term, commencing as before would be

$$A - n - 1. d.$$

According to this the corrections given in the fourth column of the following table have been made.

* The observed quantity is .9959917; the difference is + .0000120, a quantity too small, I apprehend, to cast a doubt upon this general law.

Specific gravity of Sea Water from 47° 28' N. Latitude to 18° 11' S. Latitude.

Date.	Temp.	Sp. gr.	Reduced. Sp. gr.	Latitude N.	Longitude W.
				° ' "	° ' "
Sept. 16	65.8	1026.2	1027.290	47 28	7 26
17	66.5	1026.3	1027.522	46 42	8 3
18	68.3	1025.6	1027.160	44 53	8 16
19	66.0	1026.2	1027.328	44 6	8 57
20	65.9	1026.0	1027.109		
22	69.9	1026.3	1028.161	38 46	14 21
23	71.8	1026.3	1028.578	36 29	16 16
24	73.7	1026.4	1028.976	30 42	17 32
25	73.8	1026.4	1028.994	31 12	18 15
26	74.6	1026.3	1029.045	28 36	19 17
27	75.5	1026.5	1029.414	25 19	20 50
28	77.7	1026.1	1029.428	21 52	22 50
29	79.0	1025.9	1029.472	18 46	24 59
30	81.2	1025.2	1029.186	15 33	25 51
Oct. 1	82.1	1024.6	1028.810	12 23	24 00
2	84.0	1024.2	1028.712	11 4	23 13
3	83.6	1024.4	1028.837	10 29	23 00
4	84.0	1024.2	1028.712	9 3	22 21
5	84.0	1024.2	1028.712	8 17	22 00
6	84.5	1024.1	1028.706	7 39	20 57
7	84.4	1023.9	1028.487	6 59	20 28
8	84.4	1023.9	1028.487	6 8	20 2
9	81.8	1024.4	1028.498	4 48	18 51
10	81.5	1024.5	1028.542	3 42	17 5
11	81.5	1024.5	1028.542	3 42	17 5
12	80.1	1024.6	1028.379	3 11	17 1
13	80.1	1024.6	1028.379	2 37	17 21
14	79.0	1025.2	1028.772	1 56	16 37
15	79.0	1025.2	1028.772	0 47	18 34
16	78.8	1025.4	1028.934	0 51 S.	20 31
17	78.6	1025.5	1028.997	3 2	23 6
18	78.6	1025.5	1028.997	5 44	24 51
19	77.8	1025.7	1029.046	9 4	26 23
20	77.1	1026.0	1029.215	13 6	27 18
21	76.7	1026.4	1029.540	16 0	27 15
22	76.5	1026.5	1029.602	18 11	27 3

The above table requires but little comment ; the less perhaps as some doubt attaches to the perfect accuracy of specific gravities reduced for the same temperature, in which condition only do they admit of just comparison. It is however obvious, that the gravity of sea water increases, as might be anticipated, with the distance from the land ; and that that, increase continues in the present case up to 18° 36' North latitude, when a decrease again takes place till near the equator. It then begins to rise with increase of Southing until at the point where

my hydrometer became useless, it had attained its maximum. If we take corresponding limits north and south, for instance $18^{\circ} 11'$ south and $18^{\circ} 46'$ north, we have the specific gravities as 1029.106 : 1028.717, nor will this deduction be materially affected by any error that may possibly exist in the law of expansion. The withdrawal of fresh water by congelation in high south latitudes is perhaps sufficient to account for the fact, especially as there is probably no source of compensation—unless that of the solution of ice by the heat of volcanic fires, which would I apprehend, be insufficient. The effect of the sun is only felt on the outskirts of winter, and the ice that is broken up then, rather than melted, is drifted to the north, where the heat of the air, or perhaps rather that of the water, is sufficient to dissolve it. From the two-fold cause of greater density and lower temperature, are currents produced towards the equator, serving to sustain that condition of the waters of the ocean no doubt necessary, and therefore securely provided for, to the health of organic life, marine and terrestrial.

I am, your obedt. servant,

J. MIDDLETON,

F. G. S. &c. &c.

December, 1844.

JOURNAL

OF THE

ASIATIC SOCIETY.

Extracts from a report of a journey into the Naga Hills in 1844. By MR. BROWNE WOOD, Sub-Assistant Commissioner, in a letter to Captain A. STURT, Principal Assistant Commissioner, Nowgong, dated 14th April, 1844, Golaghat.

According to the instructions received in your letter No. 108 of the 27th of January last, I proceeded on the 4th February on my way towards Dhemapoor; my first day's march being to the Namber nuddee: my second to Bor Pathar; here is a fine open plain with about 300 poorahs of roopeet (not all cultivated,) and a large populous town. The Dhunsiri river flows on its eastern side, the ryots appear to be a thriving people, and during the cold season are generally employed in cutting out boats from the fine timbers to be found in the jungles in the vicinity of Bor Pathar, and Dao Panee river, which boats they dispose of to the ryots and traders of Golaghat and Morung, taking in lieu cash enough to pay their rent; the balance they take in such articles as they require: salt, oil, and cloth.

The 3d march brought me to the Dao Panee river; a river coming from the Rengmah Naga hills, and flowing into the Dhunsiri a few miles (15) above Bor Puthar; the next day Hurreiogan nullah, from this to the Dibroo Panee river; and the following day, the 9th February, I arrived at Dhemapoor.

Dhemapoor, 9th February, 1844.—Arrived at this post about 2 p. m., and found some huts erected for me by the coolies, whom I despatched a few days previous to my departure from Golaghat, for the purpose of clearing the path from Golaghat to this post. Went over to the old fort of Dhemapoor, on the south bank of the Dhunsiri, but the place was so covered with jungle, I was unable to distinguish any thing, excepting some pillars and a gateway; these pillars are of a composition of sand, lime, and goor, &c., extremely hard and durable; several of them are in a perfect state of preservation, others have been split asunder by large trees falling across them; their general height is about 12 feet and diameter 4 feet, some of them very neatly carved. These pillars I am told, formed the ground-work of an extensive building, the distance between each post about 10 feet, and on these pillars, was the platform or *mechann*. The gateway is of brick, quite perfect at present, but must very shortly fall to pieces, as huge trees have taken root on the top of it. Some of these trees are very large, from one and a half to two feet in diameter. How they thrive up there I cannot imagine; there is also a wall of eight feet high by four to five feet deep surrounding this fort. This wall, I suppose, is half a mile square, excepting the eastern side, where the gateway is; a double ditch surrounds the wall. There are some fine trees in this fort.

10th February.—Remained to-day to inspect the stockade godown, godown accounts, &c. The stockade is on the North bank of the Dhunsiri, and around it is a clearance of about 80 poorahs, cleared by Captain Bigge in 1841, it is however again becoming a heavy jungle of grass and underwood. From the several clusters of plants and trees scattered over this spot, I should say, that the whole of this cleared land had been cultivated. On my inquiring of the Subadar the cause of this falling off, he informed me, that the sepoy had formerly cultivated the greater part of this land; but their being now moved about from place to place, has prevented their taking any further interest in its cultivation, and they consequently have given it up. I hereupon ordered the Subadar to relieve the guard but once in six months, instead of once in four months: this arrangement will allow of the sepoy cultivating the land at Dhemapoor and at the other posts. They will sow in June and July, and reap in November.

11th February.—Started this morning at 8 o'clock A. M. for Summagoding, the heavy rain of last night has made the pathway very wet, and swarming with leeches. Summagoding being too great a distance for my coolies, I determined to encamp on a sand bank in the Diboo Panee river, about three miles from the base of the Summagoding hill; from this spot I could distinctly see the houses of the Naga village; here the river is rather broad, huge stones and the wrecks of large and small trees lie in a confused mass. The Diboo Panee is a fine river, much broader and more rapid than the Dhunsiri, its banks are very low, and during the rainy season, the country for several hundred yards inland is inundated. The path from Dhemapoor runs in a S. S. E. direction for about five miles, when meeting the Diboo Panee, it followed its banks to my encampment.

12th February.—At 8 o'clock A. M. started, and arrived at the foot of the hill in about an hour and a half, the path tolerably good, but blocked up in some places by fallen trees and *bet* jungle, the latter strewed across the road by wild elephants, &c. On my way up, came upon two or three spots of cultivation, belonging to the Summagoding Nagas; another hour's march brought me up to the village, which is on the very summit of the hill. About a quarter of a mile from the village, I was met by the two Gaon Booras, who received me most civilly, and welcomed me to their village. I had thought of remaining here this day, but finding that water was very scarce, it being brought up in bamboo *chongaks* from the Diboo Panee, at the Southern base of this hill, I determined to proceed down to the river and there encamp.

I remained in the village for a couple of hours, to rest my coolies and people, and to hear any complaints the villagers might have to make against the other tribe of Nagas. The Gaon Booras on this informed me, that about two years ago, some Nagas of the Kohema tribe had seized two men and one woman of their village, who were going to their field for rice; they had since offered to ransom them, but their offers were so exorbitant, they could not agree with them. Having told them I would investigate their complaints, and having given them some presents, I took my leave; they appeared much pleased with their presents, and went away in high spirits. Summagoding is a fine high hill, height I suppose 2000 feet. On the very summit of it, is the village

"Summagoding," it contains about 100 houses; the men I found to be civil and obliging, but very independent in their notions; they are, however, tributary to the Khonoma Nagas. The river at this point is very narrow, and runs through two high perpendicular walls of rock; the rush of water during the rains is very considerable, width of river not more than 60 feet.

18th February.—Started at half-past 8 o'clock A. M. for Raja-piama, to inspect the tea lands reported to be in those hills; round along the bed of the Diboo Panee, stepping very slippery on the large stones in the river, hardly a pebble or grain of sand to be seen, the bed of the river being filled with large round stones. An hour and a half brought us to the foot of the Raja-piama hills, water nearly the whole way very shallow. Here I directed my people to remain and encamp, whilst I proceeded to the Raja-piama village to look at the tea, accompanied by my *teeklas*, and guard. On arriving at the village, I was met by Jeéreebee Gaon Boora; as unfortunately for me this was a grand festival day with them, the whole party was more or less intoxicated, the Gaon Boora, as head man, more so than his brethren; he nevertheless received me most cordially, and invitingly pressed me to taste of his "*futtica*,"* which to humour him, I put to my lips. After a little further conversation, I requested to be shewn the tea; Jeéreebee immediately escorted me to the spot, where I saw the tea plant growing most abundantly and luxuriantly immediately near to the village; I followed the tea for some distance, and saw very many spots covered with it. Jeéreebee gave me to understand, that the whole of his low hills were covered with tea. I think this may be possible, for tea has been found among the Bazee-piama hills, but in small quantities. The leaves of the plant are large, and of a finer kind than what I have generally seen in the Seeb-sagur and Muttuck divisions. I asked Jeéreebee if he had any objections to my sending up Assamese tea-makers to manufacture the tea on the spot, telling him that I would give him *moncees*,† salt, daws, &c., to which, he replied, he would be very happy to accommodate in any way, and that I should be welcome to send up the Assamese tea-makers, and that he would protect them. He agreed also to supply

* A fermented liquor from grain.

† Beads.

them with provisions on my giving him *monees*, salt, &c. In return I cannot say how much tea there may be in these hills, but I am of opinion, that it extends over a great part of these low hills. The late Mr. Grange mentions having met with it among the Jappama and Jykane Nagas. The Mazepamah and Bezepanoah, have it also on their hills. On my asking him for the fine cloths he had engaged to pay annually to Government, he asked me whether his neighbors and other Nagas had given me in theirs; I told him that some had, and that I was going round to the others, to collect. He told me that he could not give me his five, until the Konoma and Mozoma (his superiors,) had given in theirs; to which I replied, I should remain in his village, until he gave me the five cloths he had agreed to pay to Government, and that I could not go away without them. On this, he had a conference with his chiefs, and presently afterwards Jeereebec brought me his five cloths, but with a very bad grace. I gave him and his four Gaon Booras some presents, with which they were highly pleased, and we parted very good friends. Some of the Naga ryots brought me to my encampment some tea seeds, which they bartered for salt and *monees*. I endeavoured to procure some rice from the Nagas, but they told me, that they had a bad crop that season, and had not a sufficiency for themselves; having been obliged to purchase a supply for their present consumption, they could not afford to give me more than one maund; this of course could not go very far among my people. I had only brought five days' provisions with me from Dhemapoor, half of which was now expended; I therefore determined to return to Dhemapoor, where I expected certain Naga chiefs, whom I had summoned, awaiting my arrival.

14th February.—At 8 o'clock A. M. started from Summagoding, and arrived at 4 o'clock P. M., at our first encampment on the Dibad Panee, this was a long day's march; the route for six miles ran in the bed of the river, sometimes water up to our waists, and extremely cold, coolies very much distressed, footing very uncertain here. On arriving at the south-eastern base of the Summagoding range, we were unable to proceed further along the bed of the river, owing to the deep pools, walls of rock, and rapids. We here came upon Captain Bigge's road across the hills east of Summagoding. This road or pathway crosses three or

four of those hills, average height from 500 to 600 feet, it is tolerably good but jungle (grass and underwood) has again sprung up in it; the bridges and embankments then made by Captain Bigge, have given way, the wood with which they were made, having rotted. Distance across these hills about three miles; having crossed these low hills, we came again on the Diboo Panee river on the northern base of Summagoding, and having followed it about three miles further, we came to our first encampment on this river, coolies, followers, nay all of us, much fagged. On my asking the coolies which route they preferred, they gave the preference to the Naga route across the Summagoding hill. I am also of opinion, that the latter route is preferable to foot passengers; and Captain Bigge's for elephants, horses and cattle; the Naga route is passable throughout the year, whilst the road made by Captain Bigge is passable for only three months in the year when the river is low, and the route can be taken along its bed.

On my return from Raja-piama to-day, a Maun sepoy pointed out to me some tea plants; he took me up a nullah for about 200 yards, we then came upon some high land, and on both sides of this nullah saw the tea plant. On my asking him how he came to know this spot, he informed me, that he had accompanied Captain Bigge in his late expedition, and that they had encamped somewhere near here; that he came here searching for fuel and fell upon the tea; the plants were rather thinly scattered, but there were plenty of them round about in the jungle, some of the trees were large, 20 feet high, and 4 to 5 inches in diameter. This nullah falls into the Diboo Panee river, on its north side, and is about two and half miles from the southern base of the Summagoding hill.

15th February.—Started at 8 o'clock A. M., and arrived at Dhemapoor at 11½ A. M. No Naga chiefs had arrived; coolies I had left behind me here, hard at work at the godown and stockade, grass for thatching very scarce, and is only procurable about two miles distant from the stockade.

16th February.—Chiefs of the Mozoma and Bazepama tribes came in to pay their respects, gave them some presents.

17th February.—As the Upper Rengmah Naga chiefs had not arrived here at my calling, I propose going to Mohung, there to meet them,

visit the *pharree* there, and have a conference with Tularam Seenaputti, regarding the very irregular and lawless conduct of certain of his Kacharee ryots, who are constantly embroiling the Nagas in quarrel one with another, taking the part of the stronger party, and assisting them in looting the weaker one, taking for themselves a good share of the spoils; they go armed with muskets, consequently have very great advantage over the unfortunate Nagas. If also two Naga tribes wish to fight with one another, the richer party purchase the assistance of a few Kacharees, (armed with muskets,) and are sure of becoming the victors; the Kacharees receiving a handsome reward, are always ready to give their assistance to the richer party.

18th February.—Started from Dhemapoor for Mohung at 7 o'clock A. M., and encamped at 3 o'clock P. M., on the Pokaree Jhan, a small streamlet about 13 feet wide, distance about 16 miles; route from Dhemapoor in a South-westerly direction, path very good requiring but little repairs, bridges to be made over several nullahs. This road was made by Tularam Sennaputti in 1841. This road leads the whole way from Dhemapoor through Tularam's own country.

19th February.—Started from Pokaree Jhan, and arrived at Mohung half-past 2 o'clock P. M., distance to-day about 14 miles, path good, through fine open tree jungle to the Jaminoona river, about three miles from Mohung. Here we crossed the Jummoona, and came into a grassy and kuggree jungle, rain drizzling the whole day. The Jummoona is supposed to have its source near to the Topokhing Naga hills, where we crossed it; the river is about 100 feet wide, and very rapid, water up to our middle. The Diboo falls into the Jummoona about a quarter of a mile above the path on its right bank, and again the Diboo river falls into the Jummoona on its left bank about half a mile below the path.

20th February.—Mohung is a town of about 45 to 50 houses on the north bank of the Jummoona, the river is in front of the village, which is here from 80 to 90 feet broad; population Ahoms and Cackarees. Here is a *pharree* under the Jummoonah Mookh thannah, consisting of one Police mohurir and two tecklahs. On the low hills to the north of Mohung are several villages of Meekirs; they are a fine hardy set of men, and make civil and obliging coolies. These people seldom remain

more than three years on the same piece of land; they prefer clearing new tree jungle to remaining longer, as by that time grass and ekra jungle overrun their clearances, which they find more difficult to eradicate than clearing new tree jungle; they cultivate vast quantities of cotton, which they dispose of to the Assamese ryots and traders for cash and salt. Cotton thrives beautifully in almost all these low hills. On the higher range to the north of the Meekirs, are the upper Renmah Nagas, some of their villages are but one, and others two days' march from Mohung. Despatched the Kutkees to summon in the chiefs with their cloths, and also a messenger to Tularam Seenaputti, requesting an interview with him at Ramsah, a small village to the west of this a few miles.

21st February.—Not wishing to remain idle here until the arrival of the Naga chiefs and Tularam Seenaputti, I proceeded to the falls of the Jummoona, a distance of about five miles below Mohung; passed through the small village of Ramsah on the north of the Jummoona, and from there, half an hour's walk took us to the falls. Here I encamped for the day, and went to inspect these falls; chalk, coal, and lime, said to be in their vicinity, these falls are of one continuation for about half a mile. The first of about 30 perpendicular feet; 2d, about 20; 3d, of 12; 4th, of 10 feet, and so diminishing until they settle down into the rapids. The river above the falls is full to its banks, below very rapid, with many deep pools. Its banks here are of rock and of hard red sandstone; some of the rocks in the bed of the river are of immense size. During the rainy season, the body of water rushing down this spot, must be very considerable. There are small hills, height about 150 feet on each bank of the river at the falls. About half a mile from the falls I came upon the chalk as mentioned in the late Mr. Grange's Journal, I found it in the bed of the river, and also two small nullahs falling into the Jummoona. There is a large quantity of it; but I am of opinion it is pipe clay and not chalk. The coal too I saw; it is in a small nullah at the eastern base of these small hills on the north bank of the river. The stratum is small and in the bed of this nullah; but not having the necessary instruments for excavating, I was unable to get any good specimens, I however brought away with me a few pieces; the upper seam was of a soft blackish substance and easily crumbled in the hand;

below this, the coal was brittle, and broke into many small pieces. I had nothing but a Naga spear with me, so could not reach the solid coal. I told the Ramsah Gaon Boorah who was with me, to send me some good specimens, and I would reward him. The lime was some few miles below the falls, and too far away for me to visit to-day. I was told by some Meekirs that a small quantity lay in store, or rather had been in store there, but the house in which it was stored, having been burnt down, the lime lay exposed, and became one hard mass and spoilt. Cotton traders from Mohung Ramsah above are here obliged to change boats; the cotton is carried over the small hills below the rapids, and there put into other boats. Thunder storm and rain all night.

22d February.—Returned to Ramsah to await the Seenaputti's arrival. Ramsah is a small village on the north bank of the Jummoo-na with about twenty houses, population Ahoms and Cacharees. Here I met five Cossiyahs, they had come from Amoepoonjee, and had brought with them daws, kodals, and a few brass utensils, which they barter with the Nagas, Meekirs and Cacharees. I thought the articles very cheap, considering the distance they bring them from. Daws four annas, and kodalees seven and eight annas; they tell me some of their people come over yearly to trade and barter with these Nagas (Rengmas,) Meekirs and Cacharees.

23d February.—Waited till 12 A. M. for Tularam Seenaputti, but he not arriving, I left a message for him to follow me to Dholung, and then started for that village; drizzling rain the whole day. Path very wet.

24th February.—Tularam Seenaputti arrived last evening, and came to-day to pay his respects. Informed him of the frequent disturbances created among the Nagas by some of his Cacharee ryots, residing at and near Semkur, and requested he would have a stop put to such proceedings. I at the same time told him, that I had given orders to the Mann subadar to seize all such parties and to send them down to Golaghat, when they would be dealt with as my superiors would direct, that these aggressions were illegal, and if he did not put a stop to them, that he would be answerable for these aggressions of his ryots. On this he replied, that he was as anxious as myself to put a stop to such

proceedings, and had despatched some of his people for that purpose, but these Semakur Cacharees minded not his orders, and he had not the means at hand of enforcing them. * * * * The Upper Rengmah Naga chiefs now arrived, bringing with them their *lall bundee* of cloths, all excepting seven; which seven I directed the chiefs to give to the Subadar at Dhemapoor, who would forward them on to me. All the chiefs but one were present; the absent chief's village being three days' march from Mohung, the Kutkees did not reach that distance. I however told the others, (his brethren,) to tell the absent chief to take his cloth to the Subadar at Dhemapoor. These chiefs complained against those of the Jokophang tribe, for allowing the Abor Nagas, when the latter came in their marauding expedition against the Rengmahs, to rest in their (the Jokophang) village, and showing them the route to the Rengmah villages, and in some instances joining these Abors, and fighting with them. I hereupon took the Jokophang chiefs to task, and informed them, that I would hold them responsible for any further aggressions against these Rengmah Nagas, for without their assistance, I was firmly of opinion, that the Abors could not come thus far to commit these marauding expeditions. The Jokophang Nagas replied, that they were a small village, and when the Abors came, they always came in large numbers; and that they, to save themselves, had shewn the route to the Rengmah villages, but had never once joined such parties of Abors with the intention of looting. I told them that when the Abors again came to their village not to allow them to remain, but to inform the Subadar at Dhemapoor, who was but one day's march from Jokophang, and who would protect both them and the Rengmah Nagas; they agreed to this arrangement. I gave them some presents and their dismissal. The Rengmah chiefs were willing to accompany me to Golaghat, but said that now it was too late for them, as they were about to commence their crops, they would prefer therefore paying me a visit at Golaghat early this approaching cold season. The whole of the Rengmah Nagas were formerly under one chief, but about the time of the Burmese invasion, separated. Seven villages remained in their old hills, and seven villages went over towards Mohung; the former trade with the Assamese at Golaghat, the latter with Assamese, Cacharees, and Meekirs at Mohung, and below that village. Having now executed all I had or

wished to do at Mohung. I purpose starting for Dhemapoor to-morrow morning; a severe thunder storm with torrents of rain this evening. Here is a guard of one Naick and four sepoy. No complaints made by any of the Assam Militia either at Mohung or Ramsah. On my asking if they had any complaints to make against them, the ryots said, No.

25th February.—Started from Mohung on my return to Dhemapoor, and arrived at my former encampment on the Pokoijhan; drizzling rain the whole day. On crossing the Jummoona, we found that river had risen upwards of a foot since our previously crossing it; water nearly breast high, obliged to ford, no boat at hand, path very wet, leeches in abundance, rain all night.

26th February.—Started from Pokorijhan and arrived at three o'clock p. m. at Dhemapoor. No Naga chiefs having arrived, and the season being far advanced for further proceedings, I propose returning to Golaghat by water, surveying the Dhunsiri down to Golaghat. The stockade is now completed, and the godown and guard house repaired. I left instructions with the Subadar to send up Kutkees to the Konoma Naga chiefs, summoning them to Golaghat, there to meet me, as they did not think proper to meet me at Dhemapoor.

27th February.—Commenced my survey of the Dhunsiri river, assisted by Gunga Dhur Dey, formerly an ameen in Mr. Thornton's Survey Office, and who had volunteered to accompany me.

28th February.—At 6 o'clock p. m. we arrived near to the Diboo Panee.

29th February.—The 2d day near to the Hurrecojan.

1st March.—The 3d day Dao Panee and 4th day Bor Puther. Here I received a report from my Darogah, informing me, that Captain Brodie, Principal Assistant Sibsagur division, had been awaiting my return for two days, and that Captain Brodie would start for Sibsagur on the morning of the 2d March; wishing much to have an interview with that officer, respecting the arrangements he might wish to be made at Golaghat, I left the finishing of the survey with Gunga Dhur Dey, Ameen.

2d March.—At and at day-light the following morning started by land for Golaghat, and arrived at this station at 10 o'clock p. m.; but too late to see Captain Brodie, who had started that morning at 8 o'clock a. m.

I have the pleasure to annex a separate description of the rivers and roads I met with in my tour.

The Dhunsiri is a fine large river, its general width from Dhemapoor Rivers. to the point where the Dayong river falls into the The Dhunsiri. Dhunsiri, is from 200 to 250 feet; it then considerably widens, and from this point to Golaghat and below, the width is from 350 to 500 feet; its banks are in general low, and during the heavy rains of August, the country for a considerable distance inland, is inundated. There are on the banks and in their vicinity some very fine timbers, such as Nahor,¹ Holock,² Shan,³ Jamoo,⁴ Teta,⁵ Ajar,⁶ Gondhoree,⁷ Khodmid,⁸ Heelgomaree,⁹ Amoree,¹⁰ Soppah,¹¹ Heeleeka,¹² and Ajot.¹³ The river the whole way from Dhemapoor to Bor Pathur is fordable during the months of December, January and February; in many places the water shallows to six inches; boat are obliged to be drawn over these shallows, some of them run a considerable distance. This dragging of boats is rather fatiguing work, and no boats beyond 8 to 10 maunds burden, can proceed to Dhema-poor from this, during these three months. The Dhunsiri from a little below the Namber Nuddee to the Diboo Panee Mookh, is filled with the wrecks of large and small trees, washed into the river during the rains and falling in from its banks; the navigation is extremely tedious and fatiguing; in some places boats are to be dragged across the shallows, in others the passage is stopt up by the fallen trees, which must be removed, and a channel sufficiently large for the boats to pass cleared; cutting through a large tree, taking four men an hour to cut through it; in some places boats are dragged over these fallen trees, and in others passing under them; the current of this river is very sluggish during the months of December, January, February and March. The water is good and clear during these four months, after March, the water becomes thick and muddy.

The Namber is a small hill stream coming from the Rengmah Naga hills, about 60 feet wide, with a fine sandy bed. About a Namber. mile from its confluence with the Dhunsiri on its north bank,

¹ Messnaferrea, ² Diptero Carpus, ³ Artocarpus chaplasha, ⁴ Eugenia, ⁵ Mechelia.

⁶ Lagerstræmica Reginae, ⁷ Laurus Sassafras, ⁸ ——— ? ⁹ Gmelina ? ¹⁰ ——— ?

¹¹ Michelia ? ¹² Terminalia citrina, ¹³ ——— ?

is a small salt spring; the brine is very thin and weak, and to the tongue hardly perceptible: in appearance this spring is like unto numberless little fountains continually bubbling, a large mass of this water is constantly flowing out. The river, about one and a half mile from this, is another salt spring, but much larger, though the quantity of water is less: the brine is equally weak. The expense of manufacturing salt here, would I am afraid, be very great, and never repay the maker. About a mile from this, in a southerly direction are the Namber falls; the fall here is about 15 feet perpendicular, near to this, in the bed of the river, I found a confused mass, in huge blocks of shells, limestone, &c. The lime is of a superior kind, but difficult to be worked, as the river is too shallow for boats to proceed up so far; the banks are low, and during the rains, the Namber overflows its banks to a considerable extent. This river falls into the Dhunsiri seventeen miles above Golaghat.

The Dao Panee river takes its course from the Rengmah Naga hills; it is very rapid, about 100 feet wide, with a fine sandy
Dao Panee. bottom; its banks are covered with small timber, water shallow, during the cold season it falls into the Dhunsiri, forty-five miles above Golaghat, and sixteen miles above Bor Pather. The Rengmah Nagas were formerly settled on its bank, close under the hills, but were driven from thence by the inroads of their enemies, the Lota, Tokophang and Abor Nagas; from being once a populous and powerful people, they have become weak and scattered. I have intimated to the Rengmah Naga chiefs, that if they will again settle on the Dao Panee, I would allow them a guard to protect them; the guard will also be convenient in keeping open the communication between Golaghat and Dhemapoor during the rains. Since my return to this station, I called together the chiefs of the Rengmah and Lota tribes, and am happy to say, that I have succeeded in settling their former differences amicably; they have agreed to trade together at Golaghat, and for the future to be friends, their differences were settled over a grand feast that I gave them; three villages of the Rengmahs have since this, commenced clearing lands on the Dao Panee for their habitation. This is a good beginning, and I am in hopes the remaining villages will soon follow their example.

The Hurreeojan is a small muddy nullah, coming from the Jokophang Hurreeojan River. Naga hills; the North bank is Tularam Sennaputti's southern boundary; it falls into the Dhunsiri, 28 miles below Dhemapoor.

The Diboo Panee is a noble stream, as wide, if not wider than the Dhunsiri, and much more rapid ; it falls into the Diboo Panee River. latter river 10 miles below Dhemapoor. This river I believe, comes from the Konoma range of hills during the rainy season ; a large quantity of wrecks of trees is swept from this river into the Dhunsiri. A few miles from its confluence with the Dhunsiri, the bed of this river is filled with huge roundish stones, for the most part its banks are composed of these large stones mixed with gravel and earth.

The Jummoona river is already well known, therefore no further mention may be required from me.
Jummoona River.

By the present route, the total distance from Golaghat to Dhemapoor is about 60 miles ; this might be considerably shortened, say Roads. by 10 miles, and a good open path 10 feet wide through the heavy tree jungle, be cut for Co's Rs. 40 per mile, total expence would be Co's Rs. 2,080. The path at present from Golaghat to the Namber is very inferior, for the most part running through broken ground, distance 10 miles ; from the Namber to Bor Pather, path tolerably good, through open tree jungle and high country, intersected by many small nullahs, which require bridges, distance eight miles. From Bor Pather to Dao Panee tolerably good, many swamps and nullahs intersect the path, distance nine miles. From Dao Panee river to Hurreeojan, very inferior, the path is more like a wild animal's track than a road, distance 12 miles. From Hurreeojan to the Diboo Panee river again very inferior, swamps and nullahs are in abundance, distance 13 miles. From the Diboo Panee to Dhemapoor no route, except in the bed of the Dhunsiri, and this only passable during the three months of December, January, and February, when the water is shallow ; distance nine miles, total distance by present route 61 miles. By the route I have sketched in the map, this distance may be shortened by 10 miles. I should prefer the road from Golaghat to Bor Pather running through Nagorah and across to Bor Pather, to the Namber Nuddee route ; the land is high and better adapted for a road, besides being the means of opening a direct communication between Golaghat and the large Mouzahs of Nagorah Geladharee, Mackreong, &c. which is at present much required. The road from Dhemapoor to Summagoding made by Capt. Bigge is rather circuitous, and leads for three miles along the

south bank of the Diboo Panee, it then enters the bed of that river and proceeds thus for three miles, when it reaches the hills on the eastern base of the Summagoding range; the road crosses these hills (distance three miles,) it again enters the bed of the river for another two miles and then comes to the southern base of the Summagoding hills; from here to the foot of the Rajahpiama hills, the road is in the bed of the river, and there stops. Captain Bigge had a path cut in the jungle (grass) along the edge of the bank, but this has been entirely cut away by the encroachments of the river. The route along the bed of the river is very tedious and fatiguing, being for the most part over large stones and rocks, stepping exceedingly slippery, and the remainder through the water, which in some places is up to a man's middle. The path by which the Summagoding Nagas and others come to Dhemapoor, is the more direct of the two. I went to Summagoding by the Naga route, and returned by Captain Bigge's; the coolies and people who accompanied me preferred the Naga route, and I also gave it the preference; for although the ascent to Summagoding is rather tedious, it is far less fatiguing of the two. The distance direct from Dhemapoor to Summagoding by Captain Bigge's route is 18 miles, by the Nagas, 15 miles. To persons wishing to proceed to the Konoma Naga hills and beyond, Captain Bigge's route would be preferable. Elephants and horses can also go by this route, but to Summagoding the Naga route is the better of the two; neither horses nor elephants can ascend the Summagoding hills, as in some places the rocks are so steep, that steps have been cut in them to enable persons to go up by. For 3000 Rs. a good pathway might be made from Dhemapoor to Raja piama, passable throughout the year. I would take the path over the low hills in preference to trusting to the water-course. If this sum were sanctioned and I permitted, I should be most happy to superintend the road. Early in December is the best season for road-making, the country is then passable, and the ryots have finished with their crops, and willing to work.

Notes taken on a Tour through parts of Baloochistan, in 1838 and 1839, by Hajee Abdun Nubee, of Kabul. Arranged and translated by Major ROBERT LEECH.

(Concluded from p. 706.)

From Bampoor to Oodeean is a 4 days' journey over a waste, having Oodeean. no habitations, and even no water to a traveller without a good guide to lead him to the different pools. Fodder for camels is however plentiful. The village of Oodeean is a small one, about Cultivation. the size of Kalag, and as scantily cultivated; it produces wheat, barley, sesame, peas of the mash and niah kind, beans, juwaree and dates.

The chiefs of Oodeean are Shahbuz Khan and Buhram Khan, uncle of Mahommed Aly of Bampoor. They are Narvees, and the inhabitants are called Oodeeanees, who are neither Baloochees or Persians, Sunnees or Sheeahs. They are tributary to Narmasher, and pay a revenue of 500 packages of dates, and their own chiefs collect 1-5th of the grain produce.

Deer are so plentiful at Oodeean, that the inhabitants can as easily Deer. cook venison for a guest as mutton, and indeed they live much on it themselves; these animals do great damage to the crops.

The following is the road to Nurmasher from Oodeean: first stage Road. Juruft; second waste; third the remote dry lands of Bam; fourth Narmasher.

Ramishk is a small place, dependent on Bashkurd or Bashakerd, the chief of which district is Ala Verdy Khan, who is dependent Ramishk. on the Governor of Seer. The chief, or kudhkhuda of Ramishk is Kareem, who collects 1-5th of the produce. From Ramishk

Road. to Jusik direct is very difficult hilly road as follows: first stage Keelan; second Zameendar; third Boekun; fourth Gorabeen; fifth Budee; and sixth Jusik. The distance may be 50 kos; and the direction of the road S. W. The road is difficult even for footmen; there are no habitations, and it is much infested by thieves.

The cultivation of Punoch is not extensive, it consists of barley Punoch. wheat, juwaree, rice, tobacco and dates.

Kuteck and Matarabad are included in Punoch, which pays a tribute of 40 tomans Kujaree ready money, 10,000 maunds of grain and

200 packages of dates to Ala Verdy Khan of Bashkurd; this is collected by the local governor, Futteh Khan, who is deputed in these parts. The Futteh Khan. Bashkurd governor, Futteh Khan, is a Tokhee Ghiljee, son of Mahommed Khan, and some connection of Shahbudeen Khan Ghiljee of Candahar.

The fort of Punoch is very small and insignificant. Punoch has to the Port. east Sashar, and a hill of specimen No. 8 to the west, and Ramishk to the north; the east of Oodecan and west of Bazman, and to the south Bint and Dehan.

From Punoch to Bampoor is a four days' journey to Gik, six days to Road. port Golak, and five days a very difficult road.

Futteh Khan Tokhee in the time of Futteh Aly Shah, was governor The Khan's History. of Narmasher, part of which district he held in jageer, as did his father before him, who had been brought with other Ghiljees from his native country as hostages by Nadir Shah. Mahommed Shah, however, on the plea of his no longer requiring Afghan hostages, ordered him to vacate Bamean, and retire beyond the Persian frontier. This he did not do until besieged in the fort, which before he sometime gallantly defended; at last being obliged to evacuate, he retired to Seisthan and resided there for a year; after which he paid a visit and offered his services to his former friend, Ala Verdy Khan of Bushkurd, who promised him the government of Punoch, provided he could conquer Tender of service. it from the Baloochees. He went, conquered, and now enjoys it. At the time I was at Punoch, the English Government was in possession of the Island of Kharag, and Futteh Khan by letter offered his services to the resident at Bushire, and I took the liberty of forwarding the letter, and procuring the answer.

Futteh Khan has great influence in Kirman, being great ally of the Influence in Kirman. Beglarbezee Aghar Khan, who is a son of Khaleebella Shah, the head of a large religious sect, of which the Mergats of Cabool compose one division; this Aghar Shah being also one of the Force. malcontents of Persia, as it now is. Futteh Khan has a body of 500 of his own tribe around him.

I remained 10 days at Punoch, and on the eleventh (10th April,) started in company with the 8 Hajees, with whom I had parted at Bampoor, and whom I again met at Punoch, and returned towards Motarabad until I came on to the Kami Seereech, where I spent the

night. I travelled in this kour for 3 stages, sometimes due South, at Seereech. other times S. S. W., over a very difficult rivulet bed winding between hills. On the fifth day, emerging from the kour arrived at the port of Seereech, at which were a few huts of poor fishermen, who brought us some boiled fish.

16th April.—Leaving Seereech proceeded over a level road, the Gubreg. ground abounding with salt, to Gubreg, in a due west direction; here I spent the night in the khel of Meer Abdulla. It coming on to rain, he insisted on my halving the one-roomed cabin with himself and wife. One of my companions seeing the lady undress before us all without the least punctilio, uttered some abuse in Pushto of Balooch customs, which remark Meer Abdulla requested me to interpret, which I did, by saying, my companion was merely praising the unaffected hospitality of the Baloochees.

17th April.—Travelled over a level road due west to Jegeen, which Jegeen. belonged to Meerza Aly, son of Meer Hajee of Jusk, who entertained us with butter, curds and dates.

18th April.—Reached over a fine level road in a S. W. direction 8 kos, and turning a promontory, turned in a N. W. direction, and towards evening arrived near Jusk, and put up in the huts of a few fishermen.

19th April.—Two kos further brought us to Jusk, where we took up our lodgings in the mosque.

Jusk is bounded on the East by the river Seereech, beyond which Boundaries. is the district of Gik; on the West by Seereek; on the North by the Bashkurd mountains 4 kos distant; on the South by the sea.

The following are the sea-port towns dependent on Jusk; Seereech, Port Towns and Zabrey, and Jegeen. The districts are Bahmadee-zer-i-District. koh, Koh-i-Mubarak, and Barezok Myan Khisht.

The cultivation of Jusk depends on the rain; it consists of wheat, Cultivation. barley, millet, juwaree and cotton. The country belongs to Sazad Saeed, Imam of Muscat, whose resident deputy is Meer Hajee; by tribe a Kooasee, or descendant of Kar Kaoosee.

The revenue may amount to 500 tomans, equal to 3000 Fransa Revenue. rials, of which the Imaum receives 300 tomans, and when there is rain, a tax is levied of $\frac{1}{4}$ th of the produce, and may

amount to 6000 Jusk maunds, none of which reaches the Imaum. Meer Hajee has nine sons, the eldest of whom is Meer Hussein, who governs Seereek.

The principal men of Jusk are Meer Abdulla, Lashharee, Shah Principal Men. Aly, Murad Aly of the tribes of Singala and Hot, who could collect for Meer Hajee 1,000 men.

The height of the outer walls of the fort is four guz, and is of an Fort. oblong shape, being 120 paces long and 80 broad. The height of the inner walls is 10 guz; within the fort are 8 very small dismounted guns. The gate looks towards the north, and the fort contains six wells.

The proceeds of the port of Jusk are appropriated by Sumael Bijad, who is the Imaum's Jamadar of Baloochees. Its farm amounts to 100 rials.

From Jusk to Angaran, the capital of Bashkurd, is a six days' journey over a difficult road. To Manab 56 kos, to Muscat 2 days by sea, to Choubar 3 days by sea, and 10 by land.

The following posts are embedded in Jusk; viz. Astakhari Kumarao, Horak and Seereek.

The animals found at Jusk, are cattle and sheep, goats, camels, deer, horses, hogs, and jackalls.

There are no fruits; a few dates have been lately introduced, as well as one or two cocoanut trees.

The productions of Jusk are, besides wheat and ghee, wool and fish, which with sheep are exported to Muscat. The following duties are levied at the port—

On every kupah or mat package 1 Mahummodee; on every dabber Duties. of ghee 5 Mahummodies or $\frac{1}{2}$ rial; on every slave 1 rial. On every package or jalut of dates half a Mahummodee; on every ass from Muscat 4 Mahummodees.

There are no traders or measures. The coins current are rials, Currency. karanees and Seetaramée ducats, and Mahummodees. The Weigh. maund contains 24 kyies, each kyies weighing 18 Co's. Rs., and the maund equals $1\frac{1}{2}$ Muscat maund.

Vessels to Muscat and return throughout the year. Freight is at the Freight. rate of one Mahummodee per passenger, and 3 Mahummodees the candy.

I spent eight days at Jak with Meer Hajee, who during the whole time importuned me for love-charms and specifics. The Hajees proceeded on their way to Baghdad, and the next day on some other Hajees returning from the same place, I joined them, and started for Gik, having refused the offer of Meer Hajee to enter his service, and having excused myself from prosecuting my journey towards Baghdad, on the plea, that it was too late in the season, and that I had heard that the Persian Gulf was very unsafe, from the number of British vessels cruising there.

28th April.—Proceeded in an Easterly direction 2 kos to Gik, and 8 Shah-i-non. kos further to Shah-i-non over a plain, half way reached a hot spring, in the neighborhood of which sulphur is situated ; but it was found not worth working by a miner, that Sazad Saeed had sent to examine it. There is a shorter hilly road from Jusk to Shah-i-non, but without water at the latter place. We were treated to curds and dates, and asked to pray for rain.

29th April.—Proceeded 8 kos to Jignee over a level, road plain, Jignee. where wood and grass are plentiful. At this place, a rivulet from Bashkurd discharges itself into the sea, where it is called Kami Bashkurd.

30th April.—At 8 kos arrived at Gobreg over a good level road in Gobreg. an easterly direction, where there are plenty of date-trees and scattered huts. Here we were presented with a bed, the tithe of the flock, and the good woman of the house got up before dawn, and cooked a fowl for the next stage for us.

1st May.—Proceeded 5 kos over a level road in an Easterly direction to the confines of Gobreg, where we stopt at a pool, and then continuing our journey, arrived towards the afternoon at Hulk-i-Khana; Hulk-i-Khana. a collection of mat huts under date-trees. This was the Hulk or village in which Meer Abdulla, my former acquaintance lived, and he received me with the same hospitality as on the former occasion. Just as it was getting night, the wife of my host awoke me, having a bottle of warm water in her hand, and reminded me, that it was time to perform my ablutions and say my morning prayers. I was not long allowed to remain astonished at this mark of attention ; as the lady taking me on one side, and remarking that I seemed a discreet and modest young man, requested me to prescribe something

nourishing for her lord and master, who was becoming old at a much faster rate than she at all *affected*, or was pleased with. I gave her a few roots of *salab misree*, at which she uttered a thousand thanks.

2d May.—Proceeded 5 kos over a level road without water, the ground indicating the presence of salt, to the rivulet or kour of See-Sorag. reech, leaving which, and after another 3 kos arrived at Sorag, and put up in a fisherman's hut.

3rd May.—Proceeded 8 kos over a good level road, and passing here Dilshád. and there date and bar trees, arrived at the hulk of Dilshád, where a lamb was killed for us, and the head served up for us in the morning, but without eyes. From which I strongly suspected, that had the animal not being blind, we should have had to feed on curds and dates.

4th May.—Proceeded 8 kos over a road generally level without Kunaro. water to Kunaro, belonging to Sultan Shah, of the chief division or *sarsukar* of the tribe of Hot. There is a better road immediately along the sea coast. At the stage, there are about 15 mat-huts, and grass and fire-wood in plenty.

5th May.—Proceeded 6 kos over a level road to Kaiwan, and put Kaiwan. up in the house of one Khaladad, where we also had a lamb given us. I mention these presents to show the hospitality of the people of the Dasht, by which name the low coast is designated.

6th May.—Proceeded 8 kos to a collection of huts of Dashtees, still in the district of Kurwán.

7th May.—At 8 kos arrived at the confines of Karwán, and put up Stage. in the *khel* of one Dost Mahommed, by tribe a Singala of the principal division. To the East of this place is the plain of Keer and Beer; to the West Jusk; to the North Biat and Dehan; and to the South the sea-coast and port of Kolah.

From Jusk to Karwán is a level road, not however well de-Summary. fined, and requiring a guide over the Dasht; the inhabitants of which are called Dashtees. The cultivation, which is chiefly wheat, depends on the rain. The people are, as I said before, very hospitable, and the general direction of the road is Easterly. The inhabitants insisted on our praying for rain, notwithstanding the day before they had a shower accompanied with lightning, which had killed

a young man and his bullock, who had taken refuge beneath a tree.

8th May.—Proceeded 8 kos to Kourandap, or junction of rivulets, Kourandap. over a road partly in a rivulet. I stopped in a bed of the rivulet that comes from Bint, Dehan and Punoch; found no habitations. From this, Bint and Dehan are 10 kos distant, the governor of which former place is Meer Ahmed, deputed on the part of the governor of Gik, who has the supervision also of the Dasht ports. The direction of this day's road was sometimes due North, and sometimes N. N. E.

9th May.—Travelled 8 kos over a difficult road to Chokan, a place Chokan. with twenty huts among date trees, and supplied with running water.

10th May.—After 10 kos march in an Easterly direction arrived at Muht. Muht over a difficult hilly road, containing thirty huts. In the neighbouring hills flint glass, specimen No. 4, is procured. As I was about going to sleep, news arrived that Mahommed Aly Khan of Bampoor, had made a descent on Sashar, killing, wounding, and taking prisoners 150 of the inhabitants, 50 of whom he sacrificed to his father's manes. The chief of Sashar, Gholam Shah, and the inhabitants of Ispoka, having fled to Gik.

11th May.—Discovered on waking, that I had been spoiled and put off my guard, by the honesty of the Dashters; for my ass had been, through my carelessness, stolen during the night. Hiring another one to Gik, for 1 Mahummodee, arrived after an 8 kos march at Gik, and put up as usual in the mosque, the *akhund* of which proved to be a Saiyed formerly of Candahar, who received me kindly and entertained me.

12th May.—Went this day to complain of the theft of my ass to Chief. the chief, Surfraz Khan, whom I found quite a youth, and offered me a safe place to put my goods in, and explained that his uncle had gone towards Chanbár on a foray, and no doubt would bring some asses back with him, one of which I should have in lieu of my lost one. On sending for my baggage, a crowd collected round the English sword and iron scabbard, which I brought away with me on the night of my escape from the Rodbáree, and many questions were asked, what right I, as a Hajee, had to such an article. On explaining, that I was once a soldier, they mentioned that an English gentle-

man many years back had been at Gik, in whose possession they first saw an iron scabbard.

Gik is bounded on the East by Heet ; on the West by Bint and De-Boundaries. hán ; on the North by hills beyond which is Sushar ; and on the South by the plain of Keer and Beer.

The following villages are included in the district and government of Dependencies. Gik: Bint, Dehan, Heechan, Muht, and Kowhoorakon ; and the posts dependent are Seereech, Rapsh, Gleek, Tong, Goordeom, Puzur, Para, Tes, post of Chanbar, (properly Chhabar.)

The land of Gik is confined, the water is plentiful, and the inhabitants numerous.

The regent as it were of Gik, during Surfraz Khan's minority is Chief. Deen Mahommed ; his uncle Mehrab Khan, the former's elder brother and governor of Gik, was killed in action by Mehrab Khan Lung of Bampoor. The tribe of the chief is Bubdai.

The province of Gik, under an efficient government, might furnish a revenue of 1,000 ducats, 4,000 maunds of grain, and 1,000 packages of dates.

The principal men of Gik are Jangeer-i-Malak, Gohrami Meerza, Principal Men. Wukul-i-Pablivan, Meer Jangeer-i-Murak, Meer Zaly, Enemies. Shah Habeeb, Meer Shahee, Murad Mahommed, Dost Mahommed, Shah Abdulla, who are all Buledars, secretly inimical to the interest of the present chief. And the following are friendly: Shah Deen Mahommed, Meer Aludad, Meer Ahmed of Bint, Yar Mahommed of Dehan, Meer Jehangeer Buleda, Meer Dost Mahommed Singala, Dil Murad Singala, Meer Khulakdad Singala, Shahbaz Singala, Sultan Shah Hot, Jamah Hot, Rais

Meer Burhan of Hijbar. Besides the following, on account Friends. of their feuds with the chief of Bampoor, Ghulam Shah Susharee, Futteh Khan Ghiljie of Punoch. On the other hand, the friends of the Bampoor chief are enemies, such as Ibrahim Khan of Pahra, Husen Khan of Aptar, Mahommed Shah of Sib, and Ghulam Rasool Afshanee.

The government of Deen Mahommed is unpopular, and the Ajol once went to Muskat to complain of the extortions they were suffering under, and invited Suzad Saeed to invade their country.

The following is the amount of the different posts and farms:—

<i>Posts.</i>		<i>Chiefs.</i>		<i>Farms.</i>
Sureech,	..	Dil Murad Singala,	..	14 ducats.
Rapsh,	..	Jamak Hot,	..	55 ditto.
Galak,	..	.. ..	..	35 ditto.
Tang, ..	..	Shah Bey Singala,	..	nothing.
Goordem,	..	.. ..	..	40 ducats.
Puzm,	..	.. ..	..	20 ditto.
Para, ..	..	.. ..	..	8 ditto.
Tes, ..	..	.. ..	..	15 ditto.
Chanbar, (part of)	..	.. ..	..	40 ditto.

The Dashtees formerly paid to Mehrab Khan Bubdai 70 camels as *salamees* or present, besides their regular revenue from their dry lands.

The following is the revenue derived from the Dasht:—

Karwan.	..	..	...	40 ducats	Seetaramee.
Bolak,	..	..	...	40 ditto.	
Sorak,	..	..	..	40 ditto.	
Fishermen of Rasph,	..	..	..	40 ditto.	
Bint and Dehan,	..	..	..	40 ditto.	

The circumference of the walls of Gik is 1,400 paces, the walls are dilapidated in many parts, and in others 10 guz. The Meerse walls are 40 guz high, and 200 paces in circumference, it is "*ba-man*," or partly filled inside. In the citadel is a well of great depth. There is one gate to the Meerse and one to the Passel.

From Gik to Bampoor is a 6 days' journey, 4 of which to Peep is not Roads. a gun road. To port Tang via Keer and Beer, 4 days over a very difficult road. To port Choubar, 6 days, about 50 kos via Kouran, Kuroch, and Lag Dan-Dan, over a difficult road. There is a better road, however, via Jalaeé, Kalag, Nakencha, Daroodar, Chai Bas, Nisheemun, Peer Garee, and Sorkum, between which two latter places the road is somewhat difficult. From the latter takes over a plain thence to Chanbar over a hilly road. From Gik to Bamishk 8 days, to Bahua 3 days.

There are mangoes in Gik, and mulberries in Heechán; besides grapes, figs, peaches and apples are in small quantities. The

spring productions of Gik, are wheat, barley, ghee, wool and beans; Produce. and those of the autumn, juwaree, rice, dates and cotton, all which are consumed in the district, except ghee and wool, which are exported to the port of Choubar.

There are 4 shoe-makers, 100 cotton weavers, 8 blacksmiths, 4 car-
Artificers. penters, and 2 Hindoo traders, the prosperity of Gik hav-
Prosperity. ing considerably decreased under the present governor,
Deen Mahommed, from what it was under Mehrab Khan and Ma-
hommed Khan Beledais.

The following articles of merchandise are yearly consumed in Gik:—
Kandakee 1,000 pieces, mashroo 10 pieces, iron 3 candies, powder
Consumption. and lead 1 candy, and salt fish 200 camel loads. The
Hire. price of conveying which to or from the port is 4 Rs. the camel.
Currency. The following coins are current, Seetarammee ducats, rials,
Weight. Franca and Mahommedees. One maund equals our Compa-
ny's seer.

Agents' charges are half the profits, and sometimes six annas in the rupee.

At Gik I turned physician, where I spent 8 days during this time.
Return from foray. Deen Mahommed returned empty handed from Chou-
bar, but bringing prisoners as slaves and 40 ducats from Jes, as
usual in Balochistan. We had not conversed long, before he asked for
love charms. My indulging his fancy in this matter, and putting
a little plaster on an old* sword round on his nephew's head, got
me a substitute for my stolen ass, and I made preparations for
starting. A fortnight before my arrival at Gik, a Persian calling
Aly Shah. himself Aly Shah arrived with my ass, and one pair of sad-
dle bags, and tried to persuade my friend, Saiyud Mahommed of
Gik, most to accompany him on a tour of speculation, through
Scinde, where he expected to reap a good harvest.

22nd May.—Left Gik, and proceeded over a generally level stony
road 12 kos to Bug, having now and then to cross a rivulet.

The first 6 kos was in a N. E. and a E. N. E. direction, and the re-
maining 6 are a S. E. and E. S. E. direction.

* Sic in MS. ? Sore ?—Eds.

The chief of the place is Meer Murad, who lives in a small fort of no importance, surrounded by date trees. Its revenue may amount to 20,000 maunds of grain and 1000 packages of dates.

23d May.—Proceeded 2 kos to the fort of Heet, which belongs to Ghulam Rusool Afshanee, who has lately thrown off his allegiance to Kasarkund.

And thence to Kasarkund the road is a good level one, in an Easterly direction 4 kos.

This district has to the East, Purod Sangundaz; to the West, Heet and Bug; to the North, Koh-i-tolad; to the South, Bahua and Doshtyae.

The cultivation here is confined; it consists of barley, wheat, beans, peas, and rice in great quantity, which is reaped three times a year. The irrigation is plentiful.

The chief is Shah Deen Mahommed, son of Shah Abdulla Beledai, of the Mulookzur division, who has not more than 50 regular retainers, although he might collect 2,000 men.

The revenue in ready money amounts to 40 ducats, and that in kind to 2,000 maunds of rice, and 1,500 packages of dates.

The principal men next to the chief's brothers, Shah Dost Mahommed, Shah Ahmed, and his son Shah Abdulla, are Kador-
Principal Men. dad, Sher Mahommed Mulla Ibrahim, Sahib Kadeen, Meer Azeez and Dewan Hukeem. The following are the chief's cousins and Enemies. his enemies, Shah Kumal, Shah Tanzai and Shah Mahommed Murad, who is now in voluntary exile. Indeed the government of the present chief is popular with few.

The height of the fort walls is 10 guz, and thickness one-half guz,
Fort. and the circumference 800 paces, being "*baman*;" it is of mud and of great antiquity. The *muree* is 200 paces in circumference, having walls 20 guz high. There is a well in the fort. The citadel gate is towards the west.

From Kasarkund to Bampoor is a 6 days' journey, the road is 1
Roads. hear as follows: To Champ in a rivulet bed over a stony road; thence sandy soil, difficult for guns; from Kasarkund to Bukwa 3 days through a rivulet via Dashtzaree; the former place belongs to Gool

Mahommed Jathgal, and the latter to Meer Abdee Jathgal; to Chabar 5 days.

Among the fruits, mangoes are plentiful; there are besides lemons, limes, figs, pomegranates and peaches in small quantities.

On arriving at Kasarkund, I put up in the same mangoe garden that the inhabitants said Captain Grant had encamped in, in 1810; it is situated to the West of the fort, and contains besides mangoes, limes and lemons. I staid 8 days at Kasarkund.

1st June.—Leaving Kasarkund returned to Bug, which has been described before.

2d June.—Leaving Pong, proceeded in a S.W. direction in a rivulet Stages. bed 8 kos, to a few tents of Baloochees, where I sold my ass for 2 ducats, and hired another for 1 ducat to convey me as far as Chabar, stipulating that I was to be taken there after 2 nights on the road. As no supplies were to be got, I purchased a sheep and some dates for the journey, and starting in the evening, arrived in the Peeri Garee. morning at Peeri Garee, a pool of water; the direction of the road varying from S.S.W. to S.WbE. (?) the road not being a gun one.

4th June.—Started in the evening on account of the great heat of the day, and proceeded till midnight over a stony bed of a rivulet, when we emerged into a mountain skirt, and towards morning, arrived at Sarkum at a few huts of Baloochees.

5th June.—After spending the morning at Sarkum, started and arrived at the bunder of Puzm, where I got a boat to convey me to Chabar for 1 Mahommedee, where I arrived.

6th June.—Got on board a *boojee*, or boat, and spending a night at sea, arrived next day at Muscat, my object for visiting which place was two-fold.

1st. To get Futteh Khan's letter on its way to the resident at Abooshahr. 2d. To improve the state of my funds. And here let me pity the man fated to risk his life or property to a Mukran *boojee*; they are laden to the very utmost, and have invariably bulwarks of matting and bamboo.

The largest of them is 10 candies burden; the best are built at Matra near Muscat; the common sort at the chief ports of the Mukran coast, such as Gwadar and Chabar. The planks of which the boats are

made, and indeed the whole materials, are brought from Bombay. Some of these vessels go as far as Abooshahr, Busra, Bombay, and the Malabar Coast. The pilots and seamen are Mukranees, who most of them speak Arabic, Scindhya, and Hindustanee, besides their own Mukranee dialect.

Most of the *boojees* I have seen, are carefully provided with good life-preservers.

Two days after arriving at Muscat, I waited on Khaja Reuben, and delivered Futteh Khan's letter for transmission to the resident at Khaja Reuben. Bushire, at the same time requesting him to assist me in cashing a hoondie I had with me on Gwadar; this he told me, he should find a difficulty in doing. I returned home, and fed on nothing that night but grief, notwithstanding Khaja Reuben had read my passport.

10th June.—After selling an old carpet, I called on my friend Mullah Boigan. Mulla Boigan Baloch, son of Mulla Hajee, who was astonished to see me in the plight I was in. On explaining my circumstances to him, he immediately offered me the loan of 40 French rials, to be remitted to him on my arrival at Gwadar; and Mulla Mulla Yooseof. Yooseof Affghan, of Tughgan, insisted on my living with him during my stay at Muscat, which lasted 6 days, during which time I purchased some medicines to help me through the remainder of my journey.

15th June.—Leaving Muscat* after being, on the first attempt which I made the night before, driven back by contrary wind, and spending Gwadar. one night at sea, arrived next evening at Gwadar, and despatched besides the 40 rials I owed Mullah Boigan, 100 more for the purchase of pearls, and I remained two days at Gwadar; and hiring a boat arrived,

18th June.—At Chabar, having been a night at sea, and put up in Chabar. the mosque within the fort, where I gave myself out as a Hajee just returned from the pilgrimage via Muscat.

Port Chabar has to the East Bahua and Doshtzoree; to the West Boundaries. the sea; to the South the sea; and to the North the district of Kasarkund.

* This passage is conjectural; owing to very defective MS.—Eds.

The port belongs to the Imaum of Muscat, who realizes from it 2120 tomans, each toman being equal to 9 França rials. By the farm granted to Usmán Jatgál of this, Meer Aldee, chief of the Dashtgorees, receives 530 rials for protecting the port from inroads from the interior. The chief of Gik also receives 40 ducats, the amount of some ancient hereditary right. The inhabitants are fishermen and Lotee Khajas, which latter are traders.

The fort of Chabar is 140 paces in circumference, having walls 10 guz high, in very bad repair, and the fort crumbling.

Chabar has to the north a hill which abounds in tale, (specimen No. 5,) and in which is found wild indigo.

From Chabar to Kech is a 10 days' journey over a well-inhabited and good road. To Tump 8 days, to Bawa 3 days, to Dashtgaree 1 day.

The productions of Chabar are fish roes (potas) procured in June and July, from the Ker fish; fish fins procured from the pishik fish; both of these articles are exported to Bombay.

Chabar is the sea-port town of Bampoor, Gik and Kasarkund.

There are 3 dyers, 3 goldsmiths, 2 confectioners, 1 shoemaker, and 1 blacksmith.

The farmer of the port, Usman Jatgal, is the principal trader, and next to him, Wareeyun Lotega, who trades with a capital of 20,000 rials.

The following are the estimated imports of Chabar: iron 20 candies, lead and powder 10 candies, Kandakee cloth 2,000 pieces, mashroo 100 pieces, turmerick 20 candies, pedlery 500 rials, silk soosee 100 pieces, ———,* and muslins 1,000 rupees, Manzarone rice 50,000 maras or packages. Dates from Batana 20,000 packages which are consumed by the Jatgals of Butwa and Dashtgoree. Rice of the red Sindh kind, called koilasee, 50 candies, in years of dearth.

The maund of Chabar equals 10 Company's seers, which is the
Weights. Mussulman weight. The Hindoo or Bakal maund being just half.

* Illegible in MS.—Eds.

The price of a passage for a single individual to Muscat is 2 Ma-Freight. hommadees, and the freight of a candy 2 Mahommadees; a passenger to Bombay or candy of goods, pays 1 kuroosh of rials. Kuser are not now exported to Bombay as they were formerly when they had cost 3 or 4 ducats each.

The customs of Chabar may amount to 2,000 kuroosh. The import Duties. duty on Hindoos is 4 per cent., and on Mussulmen 3 per cent. The duties levied on goods from the interior are farmed for 150 rials, which is paid to Meer Abdee. From the fish maws and fins the Government exact 10, and the right of fishing is farmed for 45 rials.

The duties on matting is also farmed for 15 rials. At the port Salt Tax. of Pava, there are salt pans; duty (?) is levied on every boat according to the following scale:—

Chabar boat, 3 Mahommadees.

Gwadar ditto, $\frac{1}{2}$ Rail.

Arab ditto, 2 and 3 rials.

The coins current are Mahommadee rials and Seetarammee ducats in the following proportions:—

10 Mahommadees (sufed) in one silver rial.

23 ditto ditto in one ducat.

The copper currency is that of Bombay. I remained 10 days at Chabar.

29th June.—Left Chabar, and proceeded 8 kos at first over a sandy Tezcopan. soil, then over a descent, then to Kuchon and Mashek, where there is a well, and arrived at Tezcopan; the direction of the road being N.E. and E.N.E.; the whole road is a gun one, and the only difficulty is at the descent.

30th June.—Proceeded 8 kos immediately along the sea-coast over Nigwar. a good road, having water on it, which is not used for cultivation, except the water of a well at Shahans-i-Nigwar.

There heard of a gentleman who had ascended the neighbouring Captain Grant. hill some years back, and discovered a silver mine, which he concealed from the inhabitants. Leaving the sea coast, I branched inward in a N.N.E. direction to a few huts of Jatgals.

1st July.—Travelled over a level road in a S. E. direction for 5 kos to Gwatar. Gwatar; no water on the road for the last kos; the road turns to the E.S.E.

Gwatar is situated between the port of Chabar on the West, and the Boundaries. port of Gwatar on the East ; and has the district of Bakwa on the North ; the chiefs of which are Meer Gul Mahommed and Sushkaran Jatgal. The cultivation, which depends on the rain, consists of cotton, millet, juwaree, mash and peas.

The amounts of revenue in ready money is 10,000 Mahommadees ; that in kind at the rate of 1-10th, depends on the rain.

The fort belongs to Meer Sushkaran. The proceeds of the port amount to 130 rials.

Two Mahommadees the package is levied on mash of peas exported Freight and Duties. to Muscat, 2 rupees on every slave from Muscat, and $\frac{1}{2}$ rial on a dubber of ghee exported to it, the freight of a candy to which place is 4 Mahommadees, and of a dubber of ghee 2 Mahommadees.*

There is only one shop here, every thing being brought from Chabar. The fishermen pay 1-10th of the proceeds of their fisheries. The produce of the place is fish maws and fins.

2nd July.—Proceeded 10 kos to the port of Jeewaree, over a good level road without water, passing on the road the Darahoon hill and the Nihong kour, or “ whole river ;” the direction of this road varies from E. to E.N.E.

The port is a small one, having only 15 huts of people, who style Boundaries. themselves Shahzádahs or Princes, situated between port Gwatar on the West and port Gwadar on the East, and having to the North the district of Dasht.

The principal person at the port is Mahommed. The land is extensive, Chief. but the water as well as inhabitants are scarce.

This port was one of the principal on the Mukran Coast, but was desolated in favor of Gwadar, owing to the tyranny and extortions of the governor of Kesh. Its situation is much preferable to that of Gwadar.

3rd July.—Proceeded 9 kos in an Easterly direction to the port of Peesheekan. Gwadar over a level road, passing the Kour-i-Peesheekan, and several huts of Baloches. Sometime back on this river swelling, it brought down† — containing old coins, which was found by a

* Obscure passage, owing to defective MS.—Eds.

† Illegible in MS.—Eds.

Dashter.——* The rupees were $1\frac{1}{2}$ *unedhals* (90 grains) inweight, and even of the currency of Shah Abbás.

The port of Gwadar is bounded on the East by port Shamal; on Gwadar. the West by the Peesheekan hill; on the North by Nigwar, and on the South by a hill and the sea. This hill is a promontory or "*sunt*;" a bay is called "*khar*," and the even coast, "*teab*."

Gwadar has two bays East and West. Vessels from the last anchor in the West bay, and vice versa.

Nigwar is a small village, the cultivation of which depends on the rain. There are some date trees and a well.

The port of Gwadar belongs to the Imaum of Muscat, on whose part Chief. is a resident governor, by name Walee Mahommed, an Arab. The proceeds amount to 3,500 França rials, each rial value in Bombay 2 rupees and 2 annas.

The people of Gwadar are at present much discontented with the government, on account of Walee Mahommed charging both the Gwadar and Muscat duties on vessels going direct to Basrá, carrying carpets, grain bags, mats, packages, felts, mat bags, coarse woollens called shawls, and goats' hair; because the governor says, (these?) formerly went to Muscat. The two ports of Gwadar and Chabar formerly belonged half to the Grohkees and half to the Brahoees. The Brahoees' half was given in grant by Meer Nusseer Khan to the present Imaum's Imaum of Muscat. father, Saiyed Sultan, who took refuge at Kalat, during some convulsion of his own state. As the Brahoee state got weak and the Muscat one strong, the two former ports of Jeewaree and Pasanee were superseded by the new ones of Gwadar, Chabar, and the Gikkee; half of the latter port has also been confiscated by the Revenue. Imaum. The proceeds of last year were 4,100 rials, which exceeded the amount of the former by 1,400 rials. This increase arose from the increase in the quantity of wool exported to Bombay. The inhabitants of Gwadar are Mahdeezois and Migwarees.

The fort of Gwadar is 370 paces in circumference, and the height of Fort. the walls 5 and 6 yards; within the fort is a tower of masonry in height 30 guz and in circumference 40 paces, in which are a few small ship guns. Gwadar is subject to the foray of the people of

* Unintelligible in MS.—Eds.

Mand, on account of the quantity of powder and lead constantly lying at the port. The fort would always be plentifully supplied with ammunition; there is no water in the fort, and were rocks dug, salt water only could be procured. The fort of Gwadar is moreover commanded from the Sunt hill, where there is plenty of water in a tank; indeed this hill was formerly built on. There is also an inscription in Cufica.

From Gwadar to Kech is 6 days' journey, to Panjgoor 12 days, to Kolwa 6 days, to Kaloch 10 kos.

There is a fruit at Gwadar, well known in Hindusthan or Khorasan, called *badam-i-surkh*, or the "red almond," which is eaten like a mangoe; the shell being thrown away. This fruit is also known at Muscat. Dates and mangoes are brought in their fresh state from Kech.

The productions of Mukran are fish maws and fins, procurable at this port, which is the outlet of the districts of Kech, Punjgoor, Kharan and Dezak.

The *ker* fish, from which the maws are procured, come in season at Ker fish. the setting of the Pleiades, and the fishermen know the spots on which to cast their nets from the great noise made by these fish at this season under water. The best fish that is salted and dried for exportation is called *mushko*, which comes into season after the ———*. There is another fish called the *gor* that is much esteemed, and there is an enormous quantity of it.

This year ghee and wool were exported with great profit to Bombay, not so maws and fins.

The bazar is composed of the following shops: 2 blacksmiths, 3 shoe-makers, 10 weavers, 5 carpenters, 2 tailors, and 2 Hindoo confectioners.

The principal merchant is Meerza Bholliza, son of Moolla Kechee, Merchants. who trades with a capital of 30 and 40 thousand rupees, and has agents throughout Mukran; besides him there are 50 other small merchants, 30 Hindoos and 20 Musselmans, having capital from 5 to 10 thousand rupees.

* Sic in MS.—EDS.

The following are the estimated imports to Gwadar for consumption at Mukran, or at the port:—

Iron, 50 candies,	Pepper, 20 candies,
Powder, 3 ditto,	Pedlery, 5,000 rupees,
Turmeric, 80 ditto,	Mashroo, 100 pieces,
English cloth, 5,000 rupees,	Sugar, 100 goonees,
Bengal Soosees, 1,000 pieces,	Mangroee rice, 3,000 marris from
Kandakee, 1,000 pieces,	Muscat and Kech ; and in times
Dates, 5,000 packages,	of dearth, rice and juwaree from
Lead, 100 candies,	Sindh.
Silk Thread, 60 seers,	

Merchandise from Bombay can be sold at 5 per cent. above the original cost at 6 months' credit. The trade of Gwadar is monopolized by the native merchants.

An import duty is levied at the port of 3 per cent. on a Musselman's merchandise, and 4 per cent. on that of a Hindoo. This distinction is prevalent throughout the Mahomedan countries west of the Indus.

The produce of the Gwadar fisheries is taxed from kind ;—that of other fisheries or importation 3 per cent. On stocking for Mukran, a tax is levied on each load of 1 Mahommadee, or "*xor*." The ducat is called *sarkh* or *sark*, "red."

Merchandise to Bombay is charged on each a duty of 1 karoosh, or rial, per candy, and a passenger 1 rupee Company's, 5 Mahommadees.

The currency is in ducats, rials, Mahommadee and Company's rupees in the following proportion: 1 ducat 28 Mahommadees in copper.

One Company's rupee is 5 Mahommadees in copper. The weight of 1 Hindoo maund, or $\frac{1}{3}$ Musselman's maund, equals 5 Company's seers.

Wool met this year with a ready sale. An American ship touched here, and purchased 450 rials' worth of wool.

During my stay at Gwadar, some European sailors, 13 in number, arrived in an open boat ; they could not speak a word of any language but English, but from signs, and on referring to native charts, I made

out that they had been wrecked off the island of Khallan, while proceeding with coals to Aden. They also gave me to understand, that they had been beating about the coast of Mukran for 6 days, being afraid to land until their supply of food was exhausted, and that the people of the port had robbed them of a compass and quadrant before my arrival.

I was five days with them in Gwadar, during which time our communication was by signs, and I afforded them all the assistance in my power, and at the end of five days, put them on board a boat and forwarded them to Khaja Reuben at Muscat. They seemed very grateful for my assistance, shaking me warmly by the hand all round.

They also gave me a paper containing their statement, which (?) was afterwards forced from me, and given by the mater (?) to the Captain of the American ship who purchased the wool, to read, and who tore it up, telling the people who had the paper, that if it reached its destination it would have been prejudicial to the governor of Gwadar. I procured the ship's name from a clergyman in the ship, who was a phrenologist, but have mislaid the slip of paper on which it was written.

My attention to the sailors betrayed me as a servant of the British Government, and I became anxious to depart.

11th July.—Proceeded by boats to Gwadar, and hiring a camel, travelled 3 kos to a few huts under one Shah Kaiheera.

12th July.—Proceeded due north over a good road, but without water 10 kos to a few huts of Jatgals, where I was obliged to content myself with coarse food.

13th July.—Hired a camel for 4 rupees to take me to Kasarkund, and proceeded during the night to the town of Gul-Mahommed Jatgal, chief of Bukwa, who enquired whence I had come, and on being told from the pilgrimage, he treated me with great respect, and made me a coarse entertainment.

14th July.—Proceeded 8 kos over a level good road to——* where I succeeded in purchasing some rice.

15th July.—Proceeded all night 10 kos over a bad hilly winding road to Kasarkund.

* Unintelligible in MS.—Eds.

16th July.—Purchasing next day after my arrival mash and some flour, started in an easterly direction 10 kos over a level road to Oshaph, containing 10 huts.

17th July.—Proceeded 10 kos through a rivulet bed to Parad, there being water at one place on the road, and found the way free (?) from Dahee, Mazab, and Afshan robbers.

Parad has to the West Kasarkund ; to the East Ferozabad ; to the North Sarboz, and to the South Bukwa.

The following are the villages of Parad : Kosolokan, Duspulakan's Villages. Jameedar, Bafónán, Petan Sahabad, Radbán, Zyurutja, Gunjabad, Hel and Balahan. The land is confined, and cultivated with the Mukran grain.

The chief is Mulla Meean Buledoi, who has no dependents ; he derives a revenue of 80 ducats and 10,000 maunds of grain.

The principal men are, Meer Shahibi Káocén, Meer Abdullah Rustam, Meer Omar Rájáee-i-Shahi, and Durra-i-Kerazai.

The rate at which the revenue is levied varies from $\frac{1}{3}$ to $\frac{1}{2}$ and $\frac{2}{3}$, and is so oppressive, that most of the cultivators have fled to Bukwa.

The friend of the chief is Shah Den Mahommed of Kasarkund, Friends and Enemies. and his enemies, Bareean and Meer Ameen, and Mahommed Shah of Sib.

The fort is very small and insignificant. Twenty years ago a Persian
 Fort. detachment levied 700 ducats from the place, by means
 Persians. of a gun they had with them.

A rivulet from Surbaz passes Parad. The distance to which place is 14 kos ; to Bampoor 6 days' journey in rivulets ; to Sib 5 days viâ Sarbaz and Afshan, Erifshan and Narkand. During my seven days' stay at Parad, I cured Mulla Meean of the rheumatism, in return for which he offered me land, a wife, and the village of Parad, if I would settle there.

25th July.—On starting to-day was presented with a matchlock, which I sold immediately for $1\frac{1}{2}$ ducat, preferring not to assume the character of a soldier on my journey. Selling his present before his eyes, so far from offending the old gentleman, was actually his own proposal. During my stay here, it was my fortune to attend Mulla Meean's daughter, who was really the prettiest girl I had seen in Mukran ; she was subject to fainting fits.

Travelled 4 kos to the east to Ferozabad, a place containing grapes, pomegranates and mangoes in some quantity. It has to the east the Lameeman's hills, and to the south the Rosk hills.

The chief of this place is Shah Deen Mahommed of Kasarkund, which is indeed his inheritance.

The revenue is as follows :—

Ready money, 10 ducats.

Gram, 20 candies at the rate of 10.

Dates, 30 ditto ditto.

The fort is on an eminence, the walls of which on one side are 30 guz, and on another 5 guz, the circumference is 300 paces.

26th July.—Proceeded due south over a level road in a rivulet 6 kos to Rosk, the chief of which place is Meer Jan Mahommed. It is very fertile and well peopled, having 200 huts. I brought a letter of introduction from Mullá Meeán, and was nearly being detained to prescribe for my present host, had I not excused myself as having no medicines. There is a small gun here, which is only used to tie horses to.

27th July.—Proceeded 4 kos to Bofan in a E.S.E. direction, in a rivulet bed with date trees.

The place is under a son of Meer Taj Mahommed, and is very scantily cultivated on account of the nature of the country, which is hilly. Again proceeded sometimes in an E. and sometimes in a E. S. E. direction, in a rivulet bed to Pesheen 5 kos, which is a well cultivated place, under Shah Dost of Dezak, by tribe a Shahzada.

The principal men are Sahib Kadeen, Bor Meer Zaly, Mulla Noor
Principal Men. Mahommed, and Poor Dil Khan, Keenajee. The former chiefs of Pesheen collected revenue from Bukwa.

28th July.—Proceeded in an Easterly, E. S. E. and S. E. direction
Mand. over a level road 8 kos to Mand, which is a fertile place, containing 2 villages, Ko-oo-kan and Sorag. To the north is the Kour Nahang, which rises in the Zamoran hills.

The principal man of the place is Ghulam Mahommed, by tribe a Rindh, who with the whole of his tribe are great thieves, and much dreaded in Mukran.

The principal men are Ghulam Mahommed, Abder-i-Gaz Kandee,
Principal Men. Shah Maree-i-Dakeeda, Shahdadi Abdoo, Slahoo

Kuajai, Kasim Ferozai Murad, Mullazai, Keenajee Shahabzai, Omar-i-Yusuf Dadurzai, Khuddedad Murad Sowatzai, Ameer Khuddedad Paluchatee, Shahdad-i-Abdee, Kohlur See, Asadulla Buzdar Khuddedad Askánee, Doten Surbinmee, Murad Meerazai, and Kumal Murakzai.

These men are very independent, and say, they are originally of Kochee.

From this to Sib is a five days' journey over a mountainous road, and to Gwadar 7 days over a gun road. The maund used here equals 12 Company's seers.

30th July.—Proceeded 8 kos, at four of which crossed the Nahang Kaw over a good level road to Tump, which has to the East, Kasarabad; to the West, Mand; to the North, Pulabad, and the Zameeran hills S. E.; the South, Dosht.

The following are the villages of Tump: Jolaejee, Soedgo, Malikabad
Principal Villages. Kalat-i-Dezak, Nazaráod, Kokobád, Kourjo, Kulhoo, Peelabad, Gomazee, Malohal, Kansado, Hotjo, Kohrán, Bala Cheechá and Sorafgan; most of the dry lands are towards Nigwar. The land of Tump is fertilized by springs and *karezes*.

The chief is Malik Danai, son of Meer Dost Mahommed Giehkee, Revenue. who has 100 dependents, and collects 250 ducats in ready money, 5000 maunds of grain, and 1000 packages of dates.

The principal men are Meer Razae Hot, Meer Haibotun Hot,
Principal Men. Meer Shahoo Hot, Sher Mahommed Nigwarree; these are friendly to the chief, while the following are enemies: Kamalan Hot, Meer Brahim Hot, Meer Yoosef, Meer Ameer, Meer Afzal, and Meer Bijad Eesazais. These have retired to Peelabád, and pay no revenue. The *kotwal* of Tump is Kaim Khan.

The height of the fort walls is 8 guz and the circumference 800 paces; the height of the citadel 20 guz and the circumference 200 paces. The fort is situated on an eminence and has a small gun.

From Tump to Gwadar is 5 days' journey as follows: 1st stage Karmakan, 2d Sunta, 3d Nigwar, 4th Dardar and 5th Gwadar, which is over a good level watered road.

To Sib 6 days, over a difficult mountainous road.

There are 100 weavers, 2 shoemakers, 3 blacksmiths and 5 Hindoo traders. Here I remained 4 days with Tetga, a Hindoo, during

which time I was offered the appointment of manager to Dahlo Deenar.

4th August.—Crossing the rivulet, proceeded to Peelabad 2 kos in a northerly direction ; it is opposite Tump. The chief of the place, which is a fertile one, is Shah Umar-i-Meer Tangai Gichkee. Here I was warned not to advance, as the plague was raging at Kech.

5th August.—Proceeded 8 kos over a level road. To the East Nasarabad, where I spent the night ; no one from Kech was allowed to enter here. This place has to the North the Zamaran hills.

The villages are, Nakabad, Kolanee, Noudaz, Kohdee and Shakka-Villages. The land is extensive, but the supply of water limited, which might be increased by a bund across the rivulet, which falls into the sea between Gwadar and Jeewaree. Tobacco is plentifully cultivated here, and is renowned throughout Mukran. The chief of the place is Meer Hosain, son of Meer Dost Mahommed, and brother to Malik Deenar of Tump.

He has 200 dependents and collects a revenue of 15 ducats, which is at the rate of 1 Mahommedee per every Davzadah, a Nakeeb (purchased slave.) The Baloochees pay no revenue in ready money. In kind, he collects 30 candies wheat, 8 candies cotton, juwaree 8 candies, and tobacco 10 in kind.

The principal men are, Omar-i-Eesa, Abdoo Meerzazai, Meer Akoo-i-Chiefa. Mura Deena, Kow Mahommed, and Dashen Panjahomlee of the tribe of Kosheedee. Meer Nasseer Khan Brahoee took this place with a loss of 700 men, which he felt, to use his own words, as the "loss of one horse shoe."

The fort is dilapidated ; and is 250 paces in circumference and 10 guz in height.

6th August.—Proceeded over a level road 10 kos to Kech in an E.S.E. and S.E. direction, having a difficulty at one part in a rivulet on the road. At intervals were to be seen bodies of men who had died of the plague. As I advanced, my heart began gradually to fail me, as these sights became more frequent and multiplied. Kech is bounded on the East by Lamee, and Gwashtang ; on the West by Nasarabad ; on the North by hills ; and has to the South the post of Gwadar.

The villages of Shahors of Balochistan generally consist of not more than 20 huts and 1000 date trees. Those of Kech are the following: Joosak, Bug, Zorabad, Kalgaree, Soraph, Making, Komejes Iskarabad, Fakeerabad, Hujjatabad, Aleabad, Surdasht, Turbal of Dahu Mazhabs, Sooragee, Purkee, Humzaabad, Fuzilabad, Gwashtang, Kauhoor Kalat, Noken Kalat, Pooree Kalat, Gokdan, Shahkahan, Rosta, Chotoee-joe, Gazan and Bet.

The ground of Kech is limited in proportion to the inhabitants, in the waste lands the following are cultivated: barley, wheat, juwaree, cotton, rice, mash and peas.

Kech is governed by Meer Mehrab Khan of Kalat, through his Naib or deputy, Meer Fukeer Mahommed Beezanjad, son of Meer Keejara.

The revenue in ready money amounts to 12,000 Mahommedees, Revenue. 4,000 maunds grain, and 4,000 packages of dates, which is —* by the Gichkees under Shah Kosam and Meer Durra.

The principal men of Kech are, Meer Durra of Gwashtang, and Mulla Umur of Kauhoor Kalat.

The chiefs of tribes are Meer Khamalam Sungur, Meer Bahram Hot, Kamalan Dahee, Mazhab of Turbut, and Mulla Badradeen Mulla-lazeji.

The principal men of Turbut, are, Rais Gamguzar, Rais Moosa, Mulla Reuben, Mulla Eesa, Mulla Noor Mahommed, Mulla Yusuf Yacoob, Mulla Durvesh, Meer Noor Mahommed, and Meerza Mahommed Dashtee.

The governor of Kech always consults and acts in concert with Shah Kosam and Meer Durra, who have on several occasions —† the Kalat governor of Dasht and Bakwa; both formerly paid revenue, they are both now independent.

The Shahghasee collected 10 camels from the Dashtees, 200 ducats Shahghasee. from Tump, 100 ducats from Nasarabad as a fine, besides the revenue, and from Kech 400 ducats; none of which on his return to Kalat he gave Mehrab Khan credit for.

The boundary of Kech was formerly at a heap of stones, called "Cheedah i-Malik," near Kasarkund.

* Unintelligible in MS.—Eds.

† Sic in MS.—Eds.

Turbut paid no regular revenue to Kech formerly, but merely sent Turbut. a few slaves yearly direct to Kalat. The chief of this place was formerly Mulla Baiceán, now at Muscat, who had resident parties, Badrodeen and Mulla Rahmat-i-Eesa. These were ejected by the inhabitants, who themselves chose Kamalan Dashtee, the present chief.

The revenue of 4 Mahommadees per loom is levied from every weaver, and the same from every shoemaker; besides often requiring their labour free.

Were Kech blessed with a just and active governor, revenue might be collected from Jo'oo, Nandrak, Jush and Jigeen.

The Shahghasee collected during his last visit to Mukran 1500 ducats, 70 camels and 4 slaves.

When Kech was governed by the Maliks and Shahzadahs, revenue was paid to it from Kichk and Mashkar.

Mahommed Shah of Sib is an enemy of the governor of Kech, while the Panjgoorees are allies.

An import duty is levied on every load, of 1 Mahommadee, and the resident Hindoos pay a yearly sum of 4 ducats.

The fort is 2,000 paces in circumference, and the citadel or muree Fort. 600 paces. The height of the outer wall is in places 10 guz high, and in other places there is a thoroughfare. The height of the citadel walls is from 40 to 50 guz long;* the other two are dismounted, and one of iron 8 guz long. Within the citadel, near the entrance to the left, is a well.

There are two gates, one to the citadel, and one to the fort towards the east, and another to the fort towards the south. This fort might be taken by driving a mine under the southern bastion of the citadel.

The fort is situated on common earth, in which rain forms small chasms.

To the East of the fort are mat huts and a marsh (?) to the West, mud huts and date trees; to the North, mat huts and rising ground adapted for a battery; and to the South, a canal and tamarind trees and rice cultivation.

* Some omission here, evidently relating to the ordnance of the place.—Ems.

From Kech to Panjgoor is 6 days' journey for laden camels over a Roads. well-watered road, not very difficult, there being a gun road viâ Buleda, on which there is only one obstacle near Garuk, a narrow defile. To Kalat 15 days viâ Kolwa and Mashkai. To Gwadar 5 days over a level road for guns.

To Sib 7 days, over a difficult mountain road viâ Zameeran, Narhuk, Kambee, Salag, Jakookan, Gwazan, Kahrai, Bot Wakaiee, and Ispe Kahan.

The Zameeran hills in which the above stages are, extend westward Hills. to Ofshan, Erifshan, Narkund, Sarboz, Bint, Bashohard and Meerab. In the time of Meer Naseer Khan Brahoe, Meer Shah Beg Gichkee went to complain to Timoor Shah Duranee, of the exactions of Historical Anecdote. the Brahoe chief, who was then encamped at Kech. Timoor Shah gave the complainant two bailiffs, with orders to cut the tent ropes of Naseer Khan immediately on their arrival, and make Naseer Khan's followers carry their baggage on their backs for the first stage out of Kech. Those instructions the bailiffs performed to the letter, allowing the stage however to be at Yoosok, in the immediate neighbourhood; such was the authority of the first Duranee monarchs.

Contrary to what I heard at Panjgoor, I was here informed, that Meer Naseer Khan first gave half of the country to the Gichkees. I also heard, that the revenue of Kech once amounted to 25,000 ducats, including Mukran.

The animals of Kech are, camels, cattle, asses, sheep, goats, horses, Animals. buffaloes, and hogs without number, to prevent whose depredations, people armed with matchlocks watch their fields at night.

The birds are, bulbul, maina, shamk, turaj, and kobhs.

The fruits are mangoes, dates, grapes, mulberries, figs, peaches, limes Fruits. and lemons; of these the mangoes and dates are plentiful and good. There are also some tamarind and jamun trees. The inhabitants build with the date stem, and hem it with the gaz and kauhoor.

The productions are ghee, wool, grain and beans; the wheat is reaped at the vernal equinox, and the rice, dates, juwaree, cotton, and mangoes in July. These are consumed, with the exception of wool and ghee, which are exported to Gwadar, and cotton and tobacco and cloth manufactures to Panjgoor.

There are 1000 weavers who make shoong ashahar, soosee, lun-Bazar. gees, chadars, hufrong charuk; 40 shoemakers, 15 blacksmiths, and 12 carpenters. There are no large merchants at Kech itself. The principal reside at Turbat, and are, Painsa, a Mussulman, and Hanjoo, a Hindoo, who each trade with a capital of 5000 rupees.

On account of the exactions of the Kalat governor, most of the traders reside at Turbat.

Were it not for the extortions of the government, great profit might be made at Kech. Several merchants have formerly enriched themselves here, of which one is now alive at Karaihar; and Edevell Khan, known by the name of Moolla Keely, who used to remit his money out of the country in sweetmeat jars, covering the ducats with syrup.

The following is the estimated consumption of Kech: madder 5 Consumption. candies, indigo 40 seers, chintz 1 load, silk 5 maunds, mashroo 40 pieces, daryai 20 pieces, English cloth 1 camel load, powder and lead 5 candies, kandakee 8 loads, pepper, &c. 5 candies; pedlery 500 rupees, saltfish 300 camel loads.

The hire of a camel from Gwadar is 10 Mahommadees. From Kalat 10 rupees.

The currency is in ducats and Mahommadees. The maund equals 10 Company's seers. Agents charge one half of the profits.

Turbat is capable of great improvement, there being several *karezes* out of order that might be advantageously repaired.

At Turbat are (sects?) of Baloochees, who have peculiar religious tenets differing from those of the Koran. They call themselves Mussulmans and "*Zikarees*." While other Mahomedans, they call "*Nirnazee*," or "*Peagars*." They are called by the other Mahomedans of Baloochistan, *Dace Mazhabi*, heresy believers. They are supposed to be disciples of Hosainooden, called Peer Roshan

Origin. by his own disciples, and Peer Tairuk by the Sunnee Mahomedans, who propagated a new creed in the time of Akbar Padshah with the greatest success in the district of Teerai, whence he was expelled by a popular commotion of the neighbouring Sunnee tribes, aided by the governor of Cabool, and sought refuge and disciples with success among the ignorant Baloochees of Mukran.

The *zikarees* themselves say, that their saint was originally from the river Attock, that he performed the pilgrimage, and on his return, according to divine promise, and before a number of unbelievers extracted from the heart of a tree he pointed out, a written volume of their religious code. This tree is still pointed out on a rock called "Koh-i-Nuwad" by them, to the south of Turbat; the tree they call "Bai-i-Kouhooor." They will never take a false oath by this tree, under which they perform their orgies. Their saint was buried within the water (?) of Turbat, until Meer Naseer Khan, in his zeal for the orthodox faith, had the grave broken open, and the mouldering bones burnt to ashes with horses' litter. They believe that Antichrist has come.

They are very particular in paying tythes, but never pray or perform the pilgrimage. Their belief runs thus :—

"There is no God but one, and Antichrist is the light of God."

Their devotional exercise is as follows :—

They assemble in a ring every night on a level spot without the village, and seat themselves and commence their zillar or repetition, gradually warming as they advance.

They do not fast with other Mahommedans in the month of Rumzan, but fast 9 days of the month Zilhij. When they begin to get old and feel their death approaching, they go to their priest to seek for heaven, who sells it according to the riches of the applicant.

On every Monday evening they proceed to the "Koh-i-Murad," and have a repetition, (?)^{*} and on a certain day of the year they drug themselves with intoxicating substances, and after dancing round the tree, their priest exclaims, "It is time to be gone to heaven," when they retire to promiscuous intercourse. The marriage of a couple is not considered fortunate, nor indeed lawful before the priest sanctifies the bride.

On my arrival at Kech the plague was raging at Turbat. I proceeded to the Maeree, the residence of Meer Fuqueer Mahommed Beozanjoo, and officiated as clerk† for 15 days, during which, crowds of people prayed that never prayed before. On making preparations for my departure, the Meer gave me letters of introduction on Kalwa; one for

* Sic in MS.—Eds.

† (Pêsh numaz ?)—Eds.

his uncle Husein Khan and the other for Meer Mandar of Kalwa. During this time, as the plague increased, to prevent accidents, I sent all my manuscripts to Hajee Haroon at Gwadar, directing him in case of my death, to forward them to the Honorable the Governor of Bombay.

22d August.—Left Kech and proceeded to Turbat, where I heard of Turbat. the arrival of the army at Shawl, and of Lieut. A. Burnes' visit to Kalat. Here I staid 5 days in the house of Rais Moosa. Before quitting the subject of Kech, I must not forget to mention the following national verse:—

Gib, Kasarkund and Bug.
Sarbaz with its garden and fruits,
Parad with its beautiful girls,
Are not worth one of the poplars of Kech.

28th August.—Left Turbat and proceeded 8 kos to Bazaph over a level road, supplied with water, in a S.S.E. direction.

29th August.—Proceeded 10 kos, having passed the joining of two Dadee. roads, and the river Nelak to Dadee, situated on a rivulet with date trees and water in wells, and consisting of 4 huts of Baloochees, who had not escaped the influence of the plague, which generally carried off its victim within the 12 hours. I calculated that while the plague lasted, 1,500 people died of it. The natives in their ignorance, supposed the disease to arise from a worm in the liver, for which they administered large bowls of lime water and saltpetre, and used bathing in cold water in the open air; the weather being dreadfully hot.

I consider that women died more than men, and very young children in proportion.

There was one very strong man, a grave-digger by profession, who Grave-digger. went about joking during the plague, and defying it aloud. I saw him on the day of his last exhibition; the next day after a few hours vomiting, he required in turn the office to be performed for him that he often had so blithely performed for others. Having spent the day at Dadee, started in the evening and proceeded 8 kos, sometimes in a S.W. and others in a S.S.W. direction.

30th August.—Proceeded over a tolerable road without water 3 kos Talar. S.W. to Shereenjæ, and thence S.E. 4 kos to Talar. The road from Kech to this is a gun road, but Talar itself has a narrow

defile between two hills, in which are three pools of water, the water of one of which alone is sweet. From this place two roads separate, one to the S.W. called Rah-is-Tung, the other to the left leads to Keelach.

31st August.—Proceeded 10 kos over a level road, rather stony, in a S.E. direction to Koh-i-Dada, which is very high, and may be seen from the port of Gwadar. There are plenty of deer in this mountain; it was once the refuge of the inhabitants of the plains during an invasion; and utensils are occasionally now sometimes found after a heavy fall of rain, by hunters.

1st September.—Proceeded over a level road through dry lands Keelach. in a S.E. direction to Keelach, and put up in the house of Mulla Mobarick, the chief. The place produces the finest riding camels in the whole of Baloochistan; they are not a separate kind, but the most promising colt is picked from the herd, and trained. The inhabitants of this place are chiefly Dace Muhzab.

2nd September.—Proceeded all night in a S.E. direction to a rivulet.

3rd September.—After spending the day at the rivulet, started to- Pasanee. wards evening, and towards morning arrived at Pasanee, from which place to Kech is 4 days' journey for guns, the only difficulty being at Nigwar, but the best gun road to Kech is from Gwadar via Dasht and Nigwar, 6 days.

The port of Pasanee is a small one dependent on Kech, and governed by Mehrab Shahoo Kalmalee, whose deputy is Wulee Mahommed Gulshah. There are at present only a few huts of Baloochees and fishermen, who sell matting to the amount of 1,000 rupees a-year. The port is capable of great improvement.

4th September.—Leaving Pasanee, proceeded in a Easterly direction 5 kos on a level road to Gazdan, consisting of 12 huts of mat-makers.

5th September.—Proceeded 8 kos over a level road passing the Korokya. Koh-i-Kalimat, which is said to abound with sulphur, specimens of which I sent to Karokya; after the hill, a rivulet. The place contains some Baloochees and 100 date trees.

6th September.—Proceeded 10 kos over a level road without water, Harmarah. except at Pinnee to Port Harmarah, which is bounded on

the East by the river Baseel and the Koh-i.Malar; on the West by Koh-i-Walmat; on the North by the hill of Talaj-lok and Kolwar; and on the South by a hill and the sea.

The water of the port is brackish. The chief of this place is Jan Ally, son of Meer Jan Khan Sasai of Beloo, who has a resident deputy, Meer Hak Jatgal. The revenue of the port may amount to 2,000 rupees Kashanee.

The Meerwaders are enemies of the governor, while the Jatgals are friends. Many families have a call (?) on refuge at Gwadar from the extortions and tyranny of the governor of Harmarah.

The productions are ghee, wool, fish maws, fins, and matting.

The principal merchant is Tojoo, son of Aloo Satza of Myanee, who trades with a capital of 3,000 rupees.

The freight of a candy of goods to Bombay or Muscat is 2 rupees, and a duty levied of $2\frac{1}{2}$ per cent.

On mentioning my intention of going to Soumyamee by land, the people said I would certainly be robbed on the way for the clothes on my back, as the Baloochees were nearly reduced to starvation from this year's drought. I therefore sent my property by servants to Myanee by sea, and myself prepared to visit Hingulach as a Hindoo fukeer.

7th September.—Left Harmarah at night, and proceeded over a level road for 3 kos to the North, then 8 to the N.E. and E., and then 4 kos to the East to a few huts of Baloochees; passing the rivulet of Asar to a place called Mutchpee. The inhabitants are mat-makers.

8th September.—Proceeded to a pool called Sariab 5 kos in a E. S. E. direction, having no water on the road, which is a difficult one to Khomi-karan when the weather was very hot; there is a shorter road over the hills of Malán.

Proceeded to Hingol 5 kos, a rivulet called by that name was a difficult winding road.

9th September.—Proceeded 4 kos to Hingolah, or the Hindoo shrine of Mata Hinglaj. It consists of a well, the water of which at times rises up with a bubbling noise, discoloured like that of a river fresh swollen from the rains, and carrying mud in suspen-

sion; the Hindoo pilgrims, when this takes place, throw in suparee, cloves, cardamons, and cocoanuts. Should there be a delay in the rising, the pilgrims in the most abject manner call on "Mata" to give them a sight of herself, exhorting each other to reveal their sins and inwardly repent; when the water rises, they *salam* with both hands joined and throw in their offerings, which after sometime on a second rise are brought back again, when they are collected and form ingredients of large cakes, which they bake near the spot. A large number of pilgrims come from Hindusthan.

In the Hingol rivulets is found *sonmakee*, (specimen No. 6.)

10th September.—Leaving Hinglach proceeded 11 kos to Chat-i-Singola, (*chat*, meaning a well) over a level road. At 7 kos passed a rivulet. Here I found a few tents of Baloochees.

11th September.—Proceeded 5 kos to Chah-i-Por in an easterly direction, where I found huts and one Hindoo trader.

12th September.—Proceeded 6 kos to the East, over a level road to Chah-i-Kourgh, (*kourghá*, meaning weavers.) Here I found 100 huts and 80 weavers.

13th September.—Proceeded in an Easterly direction 8 kos to Myanee, over a level road with spring water on it. The road to this from Harmarah would not do for a detachment, the water being scarce.

On arriving at Nizanee, heard that my servant had gone to Karachee; getting on board a boat arrived next morning at Karachee, and put up in the Balice Sarai. During my stay of 6 days at Kurachee, Naomal offered me his services.

20th September.—Proceeded 10 kos to Habb, where there is a rivulet of the same name with a good level road. The place is excellently adapted for a cantonment.

21st September.—Proceeded 14 kos, and encountered some thieves on the road; some of whom I escaped by telling them I only preceded a Soumyanee. large cafila, and arrived in the morning at Soumyanee. The place has to the East Halb; to the West the sea; and to the South the sea. There is no cultivation, the ground being mounds of sand, and the water scanty and brackish. The population does not exceed 200. Every day fresh wells are dug.

The proceeds of the port amount to 1,12,000 Kashanee rupees. This Chief revenue is appropriated by the Jam of Bela, by tribe a Jatgal or Susai, who has a resident deputy, Sasih Jatgal. There was formerly a fort, of which nothing remains but a gateway. There are five dismounted guns of from 2 to 3 guz in length.

There is a road from this to Scinde via Shahhalawah, and the Seoon hill was strong and unsafe (?) and well watered ; to Khwan 8 stages.

There is another road via Kurra Pass, as follows :—

1st stage a plain ; 2d stage Dakeechá ; 3d stage a plain, with water passing the Kunara hill ; 4th stage Bubb ; 5th stage Habb, where there is a rivulet ; 6th Sindany, a plain ; 8th Tandak ; 9th Mandang ; 10th Boukan, and 11th Sehwan.

The following articles of merchandise are procurable at the port : wool, ghee, oil, fish maws, fins, sesamum, barley, wheat and juwaree : the produce of the dry lands depending on the rain. The oil is exported to Muscat.

The wool and ghee are procurable after the usual equinox, and the oil and juwaree after the rains.

There are 2 Hindoo goldsmiths, 3 dyers, 15 oil-pressers and confecturers. Chief Mahomedan merchant, Aloo-Satqa, who has a capital of 100,000 rupees. Chief Hindoo merchant, Naroomal—15 Mahomedan traders, and 25 Hindoo traders.

The following are the estimated imports : iron 60 candies, lead 60 candies, and English cloth 50,000 rupees.

Silk is imported from Karachee.

Myám may be called the port of Khorasan. I estimated the trade of Nigany at 500,000 rupees.

The currency is in Kashanee rupees, ducats, and França rials.

The maund contains 40 Company's seers. There are 3 measures, the largest weighs 8 seers, another $5\frac{1}{2}$ seers, and the third $4\frac{1}{2}$ seers. At Karachee, Bombay goods find a ready sale at 25 per cent. above the prime cost.

Brokers take exchange of 1 per cent., from both buyer and seller. Interest on money is at the rate of 6 per cent. per annum.

A tax is levied on each horse of $4\frac{1}{2}$ rupees ; the freight to Bombay of a horse, was from 10 to 15 rupees.

On every keeput of goods $1\frac{1}{2}$ rupee is levied ; on a dubber of ghee $1\frac{1}{2}$ rupee ; on madder, and raisins 3 rupees per candy.

A customs duty of 3 per cent. is levied on all merchants' import, and on goods of strangers for the Khorasan markets ; and 15 rupees the *auda* of cloth which clears Beloo.

25th September.—Proceeded 7 kos, 2 of which was over salt ground, Charoon. 2 over sand, and 3 over a plain to Charoon ; a rain water pool without inhabitants, but a great number of gaz and hawk trees. This road was sometimes due North and sometimes N.EbE. In the evening again started, and proceeded over a level road to Sigoree, the Sigoree. precincts of which are cultivated by the rain. There is no water on the stage, sesamum is cultivated at this place, where there is a tank ; there are 40 shops, and provisions plentiful ; this road runs in a N.N.W. direction.

26th September.—Proceeded through artificial platforms of cultivation (bát) 5 kos to Oobated ; a rain water tank. Thence 5 kos through báts, the road sometimes running N.W., sometimes Pamptee. N.N.W. to Pamptee, where there is a river, but no habitations.

27th September.—Proceeded over a level road 5 kos to Nul in a Nul. N.W. and N.N.W. direction ; still at the river, whence Beloo. taking a supply of water proceeded another 5 kos to Beloo, where I was questioned regarding the cantonments at Karachee.

Beloo has to the East the Chopore mountains, which are 10 kos distant ; to the West, the Lak or Pass of Jaoo ; to the North, Walapat ; and to the South, Sigaree.

The following ports belong to Beloo : Saunyanee and Harmarah, and Villages. the following towns : Sujaree, Utl, and Tattaro. The villages of the district of Beloo : Arabhot, Deedo, Wázar, Ronjah, Moorah, Ankaree, Kinhars, Acharah and Bodara.

The chief cultivation (all with the exception of that of Tatar) Cultivation. depends on the rain, it consists of juwaree, mash, peas, sesamum, rice, sugar cane and indigo. Water is not in proportion to the land and inhabitants.

The chief's title is Jam, and his tribe is called Jamot Sasai (of Sas) ; some say that originally this tribe was included in the Momborancee Brahoees. He might collect 400 men, and derives a revenue of 30,000 rupees, which he has farmed out to a Hindoo, named Chándoo.

The principal men of the tribe are Changul, Ronjah, Umar, Godar, Lal Khan, Jamot Ahmud Singala, and Ajeera Bedro.

The chiefs of the Jam are Raheem Khan, son of Walee Mahommed Chief. Sherazee Mongal, Kareem Khan, Bizanjan Umar, Ronjah Jogee, Peskar Braheem, son of Alla Rukhya Wakeel, and Hafiz Peshawaree Cazeer.

The government of the Jam is very unpopular. He is on good terms Friends. with the Khan of Kalat, with Mahommed Khan and Kamal Khan Ellazais, and with Walee Mahommed Khan Mongul.

The fort is a small dilapidated one, 100 paces in circumference, and Fort. 4 guz high. There are several dismounted guns. The gate is towards the East. The fort stands on an earthy mound. The only Persian well I saw in Baloochistan, is here.

From Baloochistan to Sindh is 10 days' journey via Shah Bilanur.

A tax is levied here of one rupee the load, and four rupees per horse.

From this to Kech and Panjgoor is 15 days' journey, where water is scarce. The road to Panjgoor is not a gun road, that to Kech across the Jáoo Sak is not a gun one, but that over the Maghal Sak. The Jains once invaded Kech with guns via the Maghal Sak.

The animals are camels, cattle, buffaloes, sheep, goats, asses, horses and wild sheep.

The birds are turaj, parrots and mainas. There are sugar-cane, lemons, limes, plantains and jáms.

They build with the kauhoor wood, pece, and neemb, and burn the turmeric, kauhoor and kunar.

There are 4 shoemakers, 100 weavers, 20 dyers, 7 Hindoo confect- Bazaars. tioners, 8 goldsmiths, 1 coppersmith, and 50 shops of Hindoo traders. The principal merchant is Bolaram, agent of Pretram Doss of Shikarpoor, who trades to the extent of 200,000 rupees. The hire of a camel to Soumizanee is 3 rupees.

The maund equals the Company's maund. Copper pice are here struck, and the currency is in ducats and Kashanee rupees.

To the N.N.W. of Beloo 5 kos, there are excavations in the mountain, which place goes by the name of Saiful Molook. To the East of Beloo in the *chappar* is a copper mine, and antimony is found here, (specimen No. 7.) Sulphur is also found in this *chappar*. To the S.W. of Beloo is the Koh-i-Mata, where *surlabs* are also found.

A tax is levied by the Jam of $1\frac{1}{4}$ rupee on every pilgrim to Hingulach.

A tax is levied at Beloo by the Monguls and Beejanjoos, nominally 7 rupees per load, but 10 and 12 rupees are paid actually, as these people bring sheep partly and other supplies, which they force merchants to purchase at their price ; besides taking of any to sending the small articles of merchandize.*

The price of a camel to Kalat varies from 8 to 16 rupees, according to the demand of carriage.

A tax is levied on cultivation of /l in kind.

On arriving at Beloo, I had a private interview with the young Jam and Raheem Khan Mongul, from whom I learnt that Faiz Mahomed Babee had, by letters, been from time to time spreading reports exaggerating the opposition experienced by the army as it advanced from Candahar, and telling the Jam to be prepared in case of a reverse to attack the cantonment at Kurachee.

From Beloo the following is the road to Jaoo :—

1st stage 4 kos, over level road to the West.

2nd ditto 8 kos, over a difficult hilly road to Kumb.

3rd ditto 8 kos, to Erosee, hilly road over the Jaoo Pass.

4th ditto 8 kos, to Jaoo, consisting of dry lands inhabited by shepherds under Darya Khan and Chutta Murwarrees.

The inhabitants are Umaranees, and hold the Daée tenets. From Jaoo and Nondrah commences the district of Kolwah inhabited by Sajudees, who are great thieves, especially one Saká, who is famous throughout the country.

The best road to Jaoo leads, W.N.W. via the Maghal Pass, which joins the former road at Eron, where there is rivulet of that name, from which place to Mashkai is one stage, and to Panjgoor 8 marches. From this, Eron to Oornoch is one stage, inhabited by Beezanjoos. The principal man is Alla Dinna, who is very troublesome to caravans. From Oornoch the next stage is Peer ; thence in a rivulet to Toorkabar.

2nd October.—Left Beloo in company with one Daroo, the darogah or manager of Eesa Khan Mongul, and proceeded 3 kos over a level road to Walapat due north, having to pass through jungle for the first 2 kos.

* Sic in MS.—Eds.

3d October.—Proceeded 8 kos over a level road, sometimes in a rivulet well watered, in a North and N.N.W. direction to Keehan on the Purallee river.

4th October.—Proceeded over an ascent 10 kos over a tolerable road except for the ———* where there is a defile or tank water on the road which depends on the rain. The general direction of the road is North some of the stages. Lulor, a place not inhabited.

5th October.—Proceeded 10 kos over a level road, then hilly, and Jamak. partly in the Kanojee rivulet, and over the Meeran Kush hill and Kanojee to Jamak, with no habitations except in the neighbouring hills, where there are Mongul shepherds. The neighbourhood of this place is generally the scene of the Mongul's depredations, and of the Beezanjoos under Futteh Ally. At this stage there is water and several kenhon trees.

6th October.—Proceeded 10 kos to Toorkabar, over a level road for Toorkabar. 8 kos, where there are 2 roads; the left one very hilly, the right a better one over the Baran lake, on which there is no water, whereas there is some on the left.

Baran was the name of the man who made the road. This road in the present state is not a gun one. The greatest difficulty extends for 120 paces. Two kos before arriving at the stage, is a place called Koh-i-Bahar Khan, where a halt is sometimes made. On passing the Baran lake the climate sensibly changes, and the heat of Mukran and Beloo is at an end.

Toorkabar means the cliff of the Turk; and report says, that a Turkish courier passing this cliff in the night, was by a false step, precipitated into the rivulet below.

7th October.—Proceeded 11 kos to Wad, the first 2 over a stony, ———* thence 3 kos dry land, called Dara-kala, where the territories of the Monguls and Beezanjoo separate. Beyond Docaliata to the West, a rivulet on part of the road, where there are some *zaitoon* trees. Thence the road over a stony descent for 5 kos to Sar-i-Aph, an excellent place for a military station; one kos further is Wad.

Wad has to the East the *chappar* (range) and to the West, Mashhai.

Wad. There are two villages; that on the West of the rivulet belongs to Hindoos, and that on the East to Mussulmans.

* Sic in MS.—Eds.

The water is scarcely in proportion to the inhabitants; to the South is the kour or rivulet of Sae. Wad has decreased in prosperity on account of several successive years of drought, and the receding state of the *karez*. Half of the place belongs to Walee Mahommed Khan Mongul, and the other to Taj Mahommed Khan and Eesa Khan of the same tribe, of the division Shaezai. The latter has the greatest influence of the three, on account of his being the most hospitable. The Monguls say, they formerly numbered 18,000, they may now amount to 8,000. On arriving at Wad, the darogah spoke to Eesa Khan about intercourse. me and my intercourse with Ruheem Khan at Beloo. Next morning I was invited to see Eesa Khan, who put to me many questions regarding the British Government, and seemed to be much satisfied with the information I gave him. The next day Meer Eesa Khan gave me a guide to be ready to accompany me to Baghbanah, and I also learnt that Taj Mahommed Khan had started to Kalat to inform Mehrab Khan, that Eesa Khan had been holding private communication with a spy of the British Government.

11th October.—Left Wad and proceeded 5 kos over a level road in some parts stony without water, in a N.W. and N.N.W. direction.

Sungarajee. Sungarajee is a stage with no inhabitants; water in pools in a rivulet.

12th October.—Proceeded 10 kos over a road partly level and partly hilly. To the first 5 kos until arriving at the mosque of Azroo there is no water, thence at a short distance and near the road are two quarries of yellow *zak* (specimen No. 8,) thence across a rivulet with water, the direction being N.W.; stopped at a *kahnee* in this rivulet.

13th October.—Proceeded in the rivulet to Abi Jekran. On leaving the last stage there are two roads, the left to Nol to the N.N.W., Abi Jekran. the other to the right N.N.E. to Ferozabad, which consists of dry lands. On a hill to the left is a lead mine, on the other side antimony is produced.

14th October.—Proceeded 6 kos to Baghbanah in a N.E. direction; Baghbanah. this place is surrounded by hills, and is subject to the Khan of Kalat, who has a resident deputy, a Shahghasee. There is a spring divided into 3 shares between the Khan of Kalat, Mahommed and Karam Khans Eltazai.

The lands of Baghbanah are divided among the chiefs; there are no ryots. Every chief has a separate village, over which he exercises sole and supreme authority. There is a measure which is [in weight] 4 Company's seers.

The rupees current are the Chantree and Kashanee, the former at 14, the latter at 15 annas.

On reaching Baghbanah, I heard that Taj Mahommed Mongul on his arrival at Kalat, had told the Khan, that Eesa Khan had made an acquaintance with Kumal Khan to plunder the Khan's granaries at Baghbanah, and that on hearing this, the Khan had detached his brother and Shahghasee Noor Mahommed to see the real state of things, with orders to attack these Khans if the report of their intended revolt was true; but if not, to coax them to Kalat under the pretence of holding council as to the propriety of making preparations for hostilities with the British troops, when he intended to confine them.

17th October.—Proceeded 6 kos in a retrograde direction to Abi Sekran.

18th October.—From this 8 kos to the plain of Ferozabad, to a rivulet with a pool of water in it.

19th October.—Proceeded over a winding road in a rivulet to Nal Nal. in a Northerly direction. The cultivation depends on the rain. The chief is Meer Husal Khan Bezanjoo, who is very hospitable while a guest is under his roof; but as soon as he quits him, will not hesitate to plunder him; he could collect a force of 1,000 men.

20th October.—Proceeded over a level road 4 kos in a Northerly and N.E. direction over the dry lands of Nal, to a stage with water, but no inhabitants. In the evening started, and in the morning after Gidar. travelling over a very bad road all night, arrived at Gidar, where I proceeded direct to my friend Baiee Khan; the road leading sometimes N.E., N.N.E., and sometimes North.

On the third day after leaving Gidar, being 23rd October, I Kalat. reached Kalat, when hearing of a copper mine at Anjeera, I returned and brought back (specimen No. 9.) On my return to Kalat, I put up in the house of Hajee Mosim, a courier, where I hoped to keep myself concealed, but was soon discovered by Faiz Mahommed Búbee, who suspected the object of my late tour in News. Mukran, and would have no doubt persuaded the Khan to

seize me, had I not a few days afterwards left Kalat by night, and by stealth. Notwithstanding the British troops were in possession of Cabool, and Dost Mahommed was a fugitive, still Faiz Mahommed was diligent spreading reports prejudicial to the British ; one of which was, that Dost Mahommed had found a treasure of *tillas* at Khulam, and was collecting a large force, paying his troops in *tillas* at the rate that the British paid them in Company's rupees.

N.B.—I did not keep the dates during my journey, and am now bringing them up. I find a difference of 10 days, for I am certain that it was on the 23rd of October 1839 that I arrived at Shawl, after leaving Kalat. Here I was detained by the Political Agent, and I afterwards accompanied him with the British troops to Kalat, at the storming of which place I was present. I subsequently remained at Kalat with the late Lieutenant Loveday, who furnished me with a certificate, the following of which is a copy:—

“ It affords me much gratification in writing this acknowledgment of the services and good conduct of Hajee Abdool Nubbee.

“ He was with me at the storming of Kalat on the 13th November, 1839, and by his activity, intelligence and fidelity, has won my cordial esteem and regard. This certificate will, I trust, prove a good introduction for him to all my friends, and he need not, I think, need a better one to any one of my countrymen.”

(Signed) WILLIAM LOVEDAY, *Lieut.*

Kalat, 8th February, 1840.

Asst. Political Agent.

NOTE.—The manuscript sent to us of this interesting paper was unfortunately so imperfectly copied as to render the task of editing it far from easy. The spelling of proper names as there given has been strictly adhered to, the more so, that the variations in the nomenclature of places (v. Arrowsmith Atlas, 1835, Burnes and Pottinger (?) Survey) from that as ordinarily received is so slight, as to render their recognition no difficulty: *ex. gra.* Bampoor for *Bunpoor*: Gik for *Gaiik*: Gwadar for *Gwattar*, &c. &c. the differences are merely those of local pronunciation so common in the East, where, to cite common instances, such towns as Lucknow and Moorshedabad are commonly called even in their immediate neighbourhood *Nuclow* and *Muksoodabad*; such variations should not only be looked for, but their publication encouraged.—EDS.

Itinerary from Yezd to Herat, from the Political Secretariat of the Government of India.

The distance from Yezd to Herat, is reckoned at 200 pharsacs.*

The direction of the route is N.E. as far as the town of Toon, from thence generally E. with a little Northing, if the road by Gownabad is followed; but if you pass by Birdjan, it is S.E. as far as that place, and from thence N.E. to Herat.

Caravans of camels use this route, they take from 35 to 50 days in performing it; horsemen, however, do it easily in 12 or 15 days. The road is in reality nothing more than a well-defined foot path, but as it generally passes over a level country, it could be easily traversed by wheeled carriages as far as the city of Toon. There are caravan serais at each halting place, erected by pious persons for the accommodation of Persian travellers, who go on pilgrimage to the tomb of Imaum Reza in Mushed, the capital of Khorassan. You also meet with, at certain distances, wells that have been sunk for passers-by to allay their thirst; but owing to the want of care on the part of the Government, they are almost all at the present day unfortunately filled up.

The plains to pass over are dry barren deserts, and seem from a distance like a sea of salt; of this description are those of Ali-abad, Shah-Abbas, Shiardil, and Garidj, where one meets with considerable tracts of country, the earth strongly tasting of nitre and salt; the only vegetation to be observed are a few saline plants. You have also to cross some low ranges of hills of an easy access as far as the sandy mountains, called "*Raig Shaturan*," which are about fifty pharsac N.E. of Yezd.

* The length of a pharsac, (parasung,) in this paper, must be much underrated. In a work called the Durra Muktai, its length is computed as follows:—

6 Barley corns, say $\frac{1}{2}$ inch, = 1 finger's breadth doubled.

24 Fingers breadth doubled, = 1 guz of 36 inches.

4,000 Guz, = 1 Mile, koh or koss.

3 Miles, = 1 Parasung, equal to 6 miles, 1 furlong and 4 yards.

But by examining the survey which accompanies this Journal, the distance from Yezd to Herat cannot be more than 400 miles, and the pharsac must be taken at 2 miles only.

You traverse the dependencies of this latter city, keeping on your right the great desert of Kabis or Kermanice, having on your left the salt desert, shewn in the present maps of Persia as being bounded by the cities of Kockon, Kayn, Seruman, Torkis, Toon and Tabos, and which the inhabitants state to be twenty-four pharsacs in length and breadth. The mountains of Bix Barrik are seen in the middle of this desert, and what is not least remarkable, is, that they are studded with villages, whose cultivated lands (sufficiently productive,) offer a pleasing contrast to the frightful wastes which surround them.

On leaving the mountains of "*Raig Shaturan*," you enter upon the eastern possessions of Khorassan, which extend as far as Herat. You first pass over the dependencies of Tubbas, which may be the *Takren* of the Greeks; then follow those of Toon, which is no other, I presume, than the Parthians of the ancients, and there still are the remains of tombs, which very possibly may be those of the Parthian kings: subsequently traversing the lands of Kagis, which you quit at the hills of Guisk to enter on the vast deserts, which end at Herat; the length being about forty pharsacs.

The ranges of hills which are passed during this route, are for the most part isolated, and of no great height; excepting those of Echo-lakan, Khanjuen, Kon and Guisk; they have a barren appearance throughout, and their want of vegetation is a strong proof of their richness in metals. It is much to be wished, that an able mineralogist would explore these countries, at every step he would make many useful discoveries. There is still a lead mine near the village of Echkidur, about six pharsacs W. of Yezd. The hill of Derind presents many traces of lead and silver ore. The earth of Posht-Badam produces some grains of gold. In the district of Toon, there is a lead mine near the village of Khok, one of copper on the other side of Khanjuer Khan, and another of silver at a place called Shia Nagree. All these mines were formerly worked, but from the oppression of the present Government which smothers all industry, they are now entirely abandoned.

I found on the surface of the earth between Buseriah and Toon, many handsome specimens of agate, above all, they are plentiful near Shia Dera.

On the range of hills near the castle of Fourk, you are still shewn the copper mines, formerly worked by Meerza Rafik Khan, the metal

from which was employed in casting several pieces of cannon, now to be seen at Birdjan.

The hills of Guisk are of a light red, which seems to prove them of a volcanic nature, and on the western side near the tomb of Sultan Ibrahim Reza, flows a moderately warm mineral spring, to which the inhabitants of the country go on pilgrimage, and drink the water for the benefit of their health. Many snakes are to be met with on this range, the bite of which is fatal.

Not far from the ruins of Gazan, is a stream, the water of which has a strong acid taste, near to Tubbus is another of a corroding nature.

Upon all the ranges of hills which extend from Batal to Herat, the people of the country gather a sort of gum called "*terendjebis*," of which the Persian medical practitioners make great use: it exudes from a small thorny shrub which grows in tufts, and which resembles the plant the camels are so fond of. The flower is whitish, like that of the lettuce, which on dropping off, gives place to a milky substance that congeals into yellow drops, which is the gum. For the purpose of collecting it, the inhabitants first cut the bush, allow it to dry, and then sift it. This plant grows wild in most of these sterile plains.

The greatest quantity of this gum is gathered in the district of Engoonzik, where also is found the asafotida; the plant which produces the latter, grows in almost all these hills, particularly those of Kelmond, Tabas and Khiliki; and those which extend to the West of Herat. The plant grows to two or three feet high, the stem is straight, and resembles very much the coarse fennel of Corsica, it has thick roots, which extend to a considerable distance. To extract the asafotida, it is necessary, in spring time, to cut the stem close to the earth to prevent its shooting, when during this season, a milky gum flows from it, which becomes hard. Every night this is removed with the blade of a knife, and every ten or twelve days a fresh incision is made to allow the gum to flow freely. Those who follow this avocation, take the precaution to cover the plants, to preserve them from the heat of the sun. It is sold to the Hindoos of Herat, who send it on to India, where it is much used in cooking.

In addition to these two plants, many are found in the hills, said to possess medicinal properties, and annually collected by the druggists of the country.

The only wild animals to be found in the hills are wolves, antelopes, a few hares, and some partridges; bears are rarely seen; it is only towards the hills of Guisk, that traces of them are to be met with. We killed two enormous ones near the salt spring of Kaband. On this route, you come upon troops of wild asses that abound in Seistan. This beast is much smaller than the horse, resembles in form the domestic ass, from which it differs only in the colour of its hair, which is reddish. Its speed is great, and they are long-winded, seldom allowing itself to be approached sufficiently near to be shot; the Affghans are fond of its flesh.

Amongst the very few trees to be seen near the hamlets, there is a bush in the district of Gosk, that produces the *serisk*, which the Persians are so fond of in their pilau. The tree is like the pomegranate, its branches in September are adorned with scarlet berries, which have a pleasing effect.

The whole country which extends from Yezd to Herat is subject from May to October, to violent gales of wind. The heat is suffocating in summer; during this season, you are also exposed to the hot wind of the desert, but which in this country is not of a fatal nature. It rains in March, April and December; it snows a little in winter. Notwithstanding that there are two crops annually, the produce is barely sufficient for consumption.

What is most remarkable during this fatiguing journey, is the total absence of any natural streams of water; here and there are a few springs in a *karez** which are often brackish, and do not allay the traveller's thirst; and what does flow from them barely suffices to water a few acres of ground, and for which purpose, the inhabitants keep it in reservoirs that are only opened two or three times a day, and distributed with great care. Their miserable-looking dwelling places take off but little in appearance from the frightful sterility of the country; a small patch of verdure only distinguishing them at a distance. The people are generally sedentary in their habits, but you meet with some wandering tribes, such as Shronदानes, the Kazunees, the Bani Kazals, Beni-Assad and Beni-Kafodzes, who inhabit the lands of Tobaz and Toon. Towards the dependencies of Kayin, are the Falohies, the Shah-

* An aqueduct which brings the melted snow, or a spring from the hills.

bis, the Heeroonees, the Yakoopees, and the Elabousails; all these tribes are of Arabic origin. A great many are colonies settled by Shah-Abbas, others of the time of Tamerlane, who, on his return from his conquests, established them in this country. These Arabs have neither preserved the customs or manners of their ancestors, except that of living in tents; they have even forgotten all traces of the language; all their wealth consists in cattle. They possess a greater mildness of manner than the inhabitants of the villages; the latter give themselves up without exertion to their miserable lot, cultivating only a few acres of land, the produce of which hardly suffices to exist upon.

In place of cultivating much, the inhabitants pass their time in spinning wool, consequently they are often subject to famine; besides being plundered by the Turkoman and Beloochees. Their fields produce wheat, barley, radishes, beet, and oil of sesamum. From a want of grain, forage and water, it would be impossible for an army to march through this country: consequently, from time immemorial, there are only two instances of this having been done. Shah-Abbas was the first who had the hardihood to do so, with a portion of his troops on his return from the conquest of Candahar. This great monarch astonished at the sterility of the sandy mountains, and the dangers which travellers were put to, halted and directed wells to be sunk, besides building small pyramids at certain distances as guides across this country of moving sand, the passage of which is so dangerous. The inhabitants of Robad still point out an elevated spot where this restorer of his country pitched his tent, and from whence he was delighted to watch the progress of his works. Most of the wells and caravanseries from Yazd to Toon, owe their existence to him. The sand hills are formed by violent gales, which blow in this country at certain periods, and which continually heap up the sand of the desert against the sides of these low ranges. They extend from N.W. to S.E. This route is a point of communication between the great salt desert and that of Kobis, and by which Meer Mahommed ventured in 1722, with a horde of Affghans, when he dethroned Shah Sultan Hussein, king of Persia.

This route since 1812, has become very dangerous for caravans, on account of the gangs of Beloochees that lay wait to plunder them. Since that time, the pillage collected by these marauders, has amounted to immense sums: often, on finding nothing to capture on this route,

they have extended their incursions as far as Kerman, Isfahan and Kochan, but with little success; many of their company being killed. As soon as one has collected sufficient plunder, he returns, and his place is filled by another. To arrive at these places, they traverse the desert of Kobis on the backs of camels, often making from twenty to thirty pharsacs a day. The gangs are never less than thirty, and seldom amount to one hundred men; the greater part of them are under a chief called Khan Dijun, who lives in the fortress of Shaknapoor, on the borders of Seistan; he it is, who sends them on these expeditions, and receives one-third of their booty as his share. These ferocious fellows have a sun-burnt complexion, their dress consists of a long cotton frock wound round the waist, with a thong of camel's hide; their heads enveloped in turbans. They shave part of the upper lip, leaving only the end of their mustachios, and allow two long locks of hair to fall on each side of the face, which reach to their shoulders. When they visit these sandy mountains, they halt and encamp at Shia Bactiara, or rather near the source of a spring, about two pharsacs to the right of the road which leads to Choutoran; here they leave their camels, and advance upon the road on foot to attack the caravans; they lay in ambush in all places, but the principal spot is in a defile near Godin Komber, to the N. of the sand hills. The Beloochees hiding themselves behind the heights, allow the caravans to enter the defile, when possessing themselves of both outlets, they pounce upon their prey, sword in hand; those who make the least resistance, are sure to be massacred without pity. By their unheard-of cruelties, they have made themselves so much feared, that twenty or thirty of them have been known to plunder a caravan of two hundred persons with impunity, the great part of them armed. The murders they have committed, are without number. The most dreadful took place in 1823, when they put to death a hundred or more pilgrims going to pay their devotions to the tombs at Mushed. There is still to be seen near the third pyramid, a heap of the remains of these unfortunate creatures, as a warning to other travellers. At the time we passed, we saw the bodies of five persons that had recently been murdered, and their assassins were encamped at Shia-Bactiara as we passed, but as they were few in number, they were afraid to attack our caravan, which was a strong one; we were well armed, besides having an escort with us. A detachment belonging to them, six in number, re-

turning from a plundering excursion, fell in by mistake with our advance guard and were sabred; two of them that were not killed, were taken on to Robad Khan, where they were tied to a tree, and shot. The people of the village that witnessed their execution, shewed signs of discontent, but they were not attended to; this makes me believe, that they are in league with the Beloochees, and that it is from them, the latter purchase their provisions whenever they are obliged to stay any time here, to wait for a favourable opportunity of attack; and what confirms me in this idea, is, that they never plunder on the lands belonging to Robad Khan, whilst there is no sort of violence that they have not committed on those of Sogan and Posht-Badam.

The governor of the country, who has every means in his power to put a stop to this pillaging, makes no attempt to do so, beyond going through the form of having a detachment of cavalry at Robad, with orders from time to time to patrol as far as the sand hills. One is equally astonished to find that the Prince at Yezd allows his territory to be plundered with impunity. Those in power, that he has placed at Kharom Sogan and other places, are more to gather a tax from those that pass by than any thing else. The only precaution they take, is to prevent a caravan from going on when they hear that the Beloochees are out plundering; for this purpose they have videttes posted on the highest places, who by signs of fires, warn the inhabitants to take to their villages. Under a better administration, it would be easy to put a stop to this rapine; detachments of cavalry posted at the most dangerous places, would preserve the tranquillity of the country, and protect travellers, who now, during this fatiguing journey, are always in fear and inquietude.

This danger is not the only one to be feared during this march; one is also exposed to that of meeting with Turkomans, which is still more terrible, as in case you fall into their hands, you are carried off to slavery. The Turkomans, who are addicted to plundering, are generally of the Imak tribe, the chief of whom lives at a place called Meimanach, about eight days' march from Herat. From time immemorial, their hordes have been in the habit of plundering with impunity both Khorassan and Herat, without the princes at the head of these provinces being able to oppose them; their incursions are rapid and unexpected; they plunder all that they encounter, and carry into slavery, men, wo-

men and children, that are subsequently sold at Bokhara. It is not only the prospect of plunder which induces them to undertake these forays, but also the desire to satisfy their hatred to the Persians; being Soonees, they believe they are performing a meritorious action in the eyes of the Prophet in taking the Persians into slavery, and in obliging them to abandon the sect of Seeahs to which they belong, to adopt their own. The dangers from the Turkomans commence on the territory of Koon, and only finish at the gates of Herat; the worst part is between Kain and Kauf. To avoid this part, our caravan conductor took another route more to the South, and which led through the district of Birdjan, but this precaution nearly proved fatal to us, for about three days' journey before reaching Herat, we were attacked by a band of Beloochees, that were only driven off by an obstinate resistance on our part.

The inhabitants of these countries have neither security or repose, the poor wretches in cultivating their land are always kept in a state of alarm, and often obliged to abandon the fruits of their labour, that they may not fall into the hands of the Turkomans. To live in some sort of security, they are forced to build small watch towers in their fields, to which they fly in case of pressing danger, which can only be entered by ladder. Not a family to be met with, but has to complain of one of its members being carried off into slavery by the Turkomans; but what is surprizing to learn is, that those who have been so taken away, make no exertion to return to their native land, on the contrary they write to their friends, that finding themselves comfortably settled, it would be madness on their part to make any sacrifices in attempting to restore them to liberty; some of them even act as guides to the Turkomans on their expeditions. At the time we travelled this route, the greatest ravages were being committed by them. The district of Herat was so infested, that Prince Kamran was obliged to seek the alliance of the Prince of Khorassan for them, in common cause, to attempt to put down so great a scourge. To avoid this danger, I parted from the caravan at Sedik, and went to Birdjan to see if I could not procure an escort from the governor, whom I had known well at the Persian court at Tehran. He was astonished to see me, received me with great kindness, and loaded me with presents. I learnt from him, that Mr. Oms, who had left the Persian service in 1824 to go on to India, had

been arrested by his people, stripped of his effects, and confined in the citadel at Fourk, from whence he had contrived to escape. So different was the treatment I received, that I appreciated the advantage of acquaintances in a strange land. The Khan furnished me with an escort of cavalry, which I sent to my friend and fellow-traveller Avitabile, and who directed the march of the caravan upon Avaz, passing by the stages of Dijisk, Gosk, and Nahkop; as for myself, I followed the road by Fourk, accompanied by a son of the governor, who did not separate from me until we arrived at Avaz. In passing by Fourk he took me to see the copper mine that his forefathers discovered, the metal from which was used in casting some guns that are now in the castle of that place.

On our arrival at Herat, we found the province exposed to civil war. Prince Kamran having in the month of April 1826, driven out his father Mahomed Shah, two parties declared themselves, and urged a furious war; the king with the assistance of Boonia Khan, at the head of the Azeris besieged the fort of Herat during the month of June, but the desertion of some of his troops obliged him to fall back upon Farrah, from whence he was taking fresh measures to drive his son from this province. These preparations obliged Kamran to seek an alliance with Hoosain Ali Mirza, Prince of Khorassan, who flattered by this submission on the part of one, who, up to this time, refused to acknowledge his authority, and foreseeing the advantages to be gained to himself, sent to his support six thousand men and four guns, under his own son Orghan Mirza. Their united forces were encamped on the banks of the Morgab, with the intention of opposing the Khan of Meimaneh, who was coming to the support of Mahomed Shah.

The city of Herat, which is no other than Aria of the Greeks, was, it is said, built by Alexander the Great. The inhabitants state, that the plain upon which it now stands, was formerly a lake formed by the waters of the Heri, and kept in by the range of hills called Senjer D'jun, through which Alexander having cut a passage for the water to flow, the plain was left dry, and the beauty of the country induced him to found this city; one thing is certain, that the castle situated about six pharsacs to the East of Herat, was built by this conqueror.

The city of Herat is small, and enclosed in a high wall built of mud, flanked by towers falling in ruins, surrounded by a deep and broad ditch always full of water. The city contains about six thousand houses,

twenty caravanseries, thirty public baths, four bazars, six colleges, and the Prince's palace, which may be considered its castle. There is nothing remarkable to be seen but the palace of Ibrahim Khan D'Janshid, and a large and deep cistern, which supplies the greater part of the population with water, it is filled by an underground aqueduct (*barez*,) which comes from the hills. The population amounts to about forty thousand souls, about two-thirds of whom are Persians, the rest Affghans. The commerce, which is carried on with Bokhara, Kandahar, Mushed and Yezd, attracts a great many strangers to it. Its productions are silk and cotton. It was pillaged by D'Jenghis Khan in the year of the Hegira 619, and again by Tamerlane, whose descendants for a long time made it their residence. This city gave birth to the celebrated historian Khondemir, author of an abridged Universal History, also to the poet D'jaim, who flourished during the reign of Sultan Hussein of Bokara, of the race of Tamerlane, and to whom he dedicated his "*Baharistan*." The environs of Herat are exceedingly agreeable. Among other places, are the country seats of Takli, Sofer, Goozerja, and the garden of Shahzada Mulik Kossoura, which are situated to the N.E. of the city. On this same side is also the famous mosque of Moossa Hala, which is close to the royal garden; such an edifice is rarely to be met with in Persia. It is now in ruins; it has six minarets and a large college, and what remains, is sufficient to shew, that its architecture, though simple, was elegant and well adapted to the climate. The richness of the ceilings and domes are surprising; the walls for the most part are Mosaic, built of glazed bricks, which, from their embellishments, present an agreeable appearance to the eye; the minarets above all, from their lightness and height to which they have been erected, are most pleasing to behold. One of these has inclination towards the tomb of Imam Reza in Mushed, which the over-religious ascribe to a miracle, and which is shewn with great display to travellers. This superb edifice was erected by Sultan Hussein Mirza Bairam, at the entreaty of his favorite slave Gohar Shah, regarding which, the inhabitants tell a marvellous tale; others give the credit of building it to Gaist-uddeen of the Gawridean dynasty; it was destroyed by the Tartars of D'Jenghis Khan.

Not far from Gowzherab, upon the hills near where this garden is situated, is a ruby mine, which was formerly worked, but has since been abandoned in consequence of these precious stones being latterly found

full of very minute holes, which took so much from their value; further to the East on the same range is a lead mine, which Prince Kamran works on his own account. The mountains which extend to the North are said to be wooded, and among many kinds of trees, is to be found the pistachio and other fruit trees in a wild state. The druggists also gather many herbs from these hills, and the dyers also find seeds and roots which they use with advantage in dyeing their clothes, and in which they excel us Europeans. The valley of Herat is of a fertility seldom to be met with in Asia. In approaching it, the richness of its enclosures and the number of villages, gladden the traveller's sight after the fatiguing journey he has to make over barren deserts to reach it. It must be about four pharsacs in breadth from N. to S., and about thirty from E. to W. The inhabitants are calculated to possess twelve thousand pair of bullocks for agricultural purposes; the fruits are in great numbers and excellent, they reckon as high as thirty-two kinds of grapes, of which the best are the Kaye Goramun and the Resil Baba. I observed that the vine was cultivated in a manner peculiar to this place. The country is everywhere intersected by canals fed by the Heri river, which almost leave the latter dry. The principal one is called the Redzil canal, which passing by the royal garden, fills the ditch of the fort. The Heri river has its source in the hills to the E., its course is to the W., and loses itself in the desert which stretches to the N. of Khorassan; it is therefore a mistake in some geographers making it discharge itself in the Zeri lake. It is crossed by a bridge called the *Poolmalan* to go to Candahar; on the Mushed road it is crossed several times.

The city of Herat from the time of Nadir Shah has always been an "apple of discord" between the Persians and the Affghans, who have disputed each other's right to it by sanguinary wars, the latter having almost always the advantage. In 1818, the Persians wishing to take advantage of the troubles which then existed in Affganistan, did their utmost to reconquer it; in consequence a battle took place at Kafir Kala, where the Persians, although victorious, were obliged to give up the attempt. Since that time it has remained with the Affghans, who have not been molested, from the frequent insurrections in Khorassan keeping the Persian troops in check. Soon after this, the Barukzyes having de-throned Mahomed Shah, this city only and its dependencies remained the property of this unfortunate king, who had again the weakness to

allow himself to be despoiled of this by his son Kamran Shah, who now governs it. This prince nearly 50 years of age, is brave and full of courage, of a determined mind and great activity ; there is no means that he does not use to attempt the recovery of his father's kingdom, but the want of money obliges him to wait until Providence offers a more favorable opportunity. It might, however, not be a difficult task for him to accomplish, considering that the Barukzye chiefs do not act in concert, and even make war between themselves ; and further, their rule is so selfish, that all the tribes are disgusted with their avarice, and ripe for revolt.

The city of Herat is capable of being better fortified. This place, in the hands of Persia, would, from its geographical position, have a great influence over any expedition sent from Russia in the direction of India as an ally. It would keep in awe the people of Bokhara, Balk and Kandahar, and by preserving its communication with the rear, permit it to advance without fear to conquest, but occupied by an enemy, it could cause insurmountable obstacles.*

From Herat to Cabool, via Candahar.

On leaving Herat, two routes present themselves leading to Cabool, one by the Huzaree country which does not take more than eight or ten days, the other is that of Candahar which is much more circuitous. Our anxiety to reach the end of our journey made us incline to follow the first, but after taking the opinion of merchants, we were obliged to give up our intention of following that route, not only on account of the roads being so bad in this mountainous country, but also from the dangers to be run from the oppressive conduct of those who govern it, towards travellers passing through ; we therefore gave the preference to that by Candahar. This latter route passes along the western side of the Firooz Khan chain of mountains, which extend as far as Candahar, dividing Seistan from the province of Gawz, and the distance about one hundred and twenty-five pharsacs ; it is almost entirely over open plains, occasionally crossing low ranges of hills, which are in no way difficult for guns to traverse. The only inconvenience that troops would find on this road, is, that it is thinly inhabited, and but few sup-

This view of a political position some as existing some years ago in a country with which we have since had so much to do is by no means destitute of utopian interest.—Eds.

plies to be had, besides the want of water at some of the usual stages, which would oblige them at times to make double marches; supplies could be drawn from Furrah and Goriskh. The caravans that use this road are composed of camels, rarely are mules to be met with: they pay a tax of three sequins, and horses six, with a present to the conductor of the caravan; camels generally travel the distance in twenty five-days, horses in eight, or at most ten. The latter march day and night, and only halt during the time necessary to rest their laden beasts; they commence to march generally at mid-day, and do not halt until midnight. They always rest at places some distance off the road, to avoid any thieves that may be abroad. At day break they are again in motion to arrive at the next stage about two or three hours after-sun rise; here some hasten to get a little rest, while others are employed in cooking and giving their horses a feed; at 12 in the day they again are in motion, and continue the same time as the preceding day. This manner of travelling is slow, and most tiresome for a person who is not accustomed to it. Before commencing our journey, we laid aside our Persian costume to assume that of the Affghans; this precaution was indispensable, as the latter being Soonees and detesting the Persians, we should have been constantly in trouble. The better to deceive them, we had our beards and mustachios fashioned after theirs, and during the whole of the journey, we conformed to their ways.

We left Herat the 1st of October 1826, our first halt was at a caravanserai of Shahabad, which is, after passing the defile called Mir Dood; in passing through which, I was imprudent enough to separate from the caravan, and my friend Avitabile and myself would most assuredly have been assassinated by some of the Noorzye tribe, who inhabited these hills, had we not owed our escape to the fleetness of our Arabs. It is in these gorges, that commences the lower range of the Ferauz Khan mountains, its direction is from N.W. to S.E., they are not however, to be compared in height to those which extend further to the N. The most elevated spot is called Firoug, from whence branch off two ranges, that of Karek and Kosserman, which run towards the W. These valleys are some of them cultivated, and others not. They are inhabited by pastoral people, who live in tents, and who generally encamp near the source or by the side of a rivulet; they communicate by a number of paths accessible to horsemen.

On quitting Shahabad, we left the high road to the right, and took a cross route ; the reason which induced our guide to this, was, that he wished to avoid the troops of Mahomed Shah, which were encamped in the plain beyond, and who were committing dreadful ravages. The country we passed over was very hilly, it was intersected by two small streams, the Ghag and Adreska, which coming from the N.E., are said to fall into that of Furrah. At the time of our crossing them, they were nearly dry, but at the melting of the snow, they swell to that size, that the caravans are often obliged to halt for many days. This country was covered with the wild pistachio, which in autumn, is covered with a rich fruit. This tree seems to flourish best in barren spots, it gives forth a quantity of gum in white drops, of which the people make no use. They gather the fruit, which they take as a stomachic. After making two marches, we descended into the plain of Dowlatabad, debouching from the Korek chain of hills by rather a difficult descent ; more to the West, there is a much easier descent, by which goes the high road leading to Furrah, the birth-place of the famous Rustam, the Hercules of Persia, and who is so often made mention of in the Shah-Namah of Firdousee. The plain upon which this place stands, is, for the most part uncultivated, if we except its immediate environs ; it is intersected from E. to W. by a small river, which, having its source in the Firouz Khan mountains, passes through a part of Seistan, and finally empties itself in the lake of Zeri, or may be the Aria-polos of the ancients. I presume, that this river is no other than the Pharnacotes of the Greeks, and that the city of Furrah is the Phra of antiquity. At the time we crossed this river, it had but little water in it, but in spring, it is said to be full and rapid ; the bed is pebbly, and its banks covered with tents inhabited by Noorzys. On quitting this plain, we left the high road to the left, to follow a by-path, which led through a pass called Rindzye Endgoust ; a terrible road for our poor-laden beasts, and bad enough for those on foot. This defile is remarkable on its eastern side for having its entrance like a gateway, formed by two enormous rocks ; a small stream which rises here, gives a picturesque appearance to the place. The high road leads through the Kasserman pass, about six pharsacs higher up, and which is in no way difficult. From this we entered upon an extensive plain, opening as far as the eye could reach towards the South, through the middle of which was running a small stream, called the Ibrahim, and

which waters the lands of Bakora, an isolated village. The plain was covered with hares, antelopes and wild asses; this last species of quadruped, is always in herds. In the middle of the plain, stands a small hill called Kou-Doug; passing to the North, we found ourselves attacked, without warning, by a band of Beloochees, some on horseback and others riding upon camels. They succeeded in carrying six beasts that were laden from the rear of the caravan; during this time we rallied and opposed them, but continued moving on with our ranks well closed up; returning to the attack, they made another attempt to overpower us, but a volley that we discharged, obliged them to retire, and permit us to continue our route unmolested, which we did as far as the Kostraud river. From thence we entered again into the passes of this hilly country, moving with the greatest caution, for fear of encountering more Beloochees, but happily we met with no more disasters. Our next stage was at the village of Vorachenk, which is encircled by a mud wall, it is inhabited by Noorzyes, who have the character of being very expert thieves: they are in the habit, like the rest of the Affghans, of collecting and mixing with the caravans, under the pretext of seeking for news, and committing every sort of pilfering; it is necessary, therefore, for travellers to keep a sharp look-out, or they are sure to be plundered: the country which extends to the N. of this village, is neither cultivated nor inhabited. The river Kosh-Zaub passes through it, coming from the N., and which is no other than a strong torrent, which, at the time we crossed it, was nearly dry; in these hills, according to Kondemir, lived the noted impostor Hakim-ben-Hasheen, who, from natural causes, produced effects, which astonished the inhabitants of these countries, and who looked upon him as a man inspired.

On leaving Vorachenk, we descended through a mountainous country into the plain of Sar, inhabited by the tribe of Subjezyes, having always in sight the Dohar hills, which forms part of the Ferouz Khan range, and which are inhabited by Alizyes. This country of Dohosi may very possibly be Dat, where Alexander passed through after having defeated the Scythians. From this, we moved upon Giriak; in approaching this town, a great change for the better was observed; in the surrounding country, we saw a district well cultivated and watered by the Helmund river; this river has its source in the province of Gour, entering on the low country through the Dohar hills, it runs here from the N.E. to

S.W., but lower down to the West, passing through Seistan, and eventually losing itself in the Zeri lake. On leaving the hills, the Helmund is a rapid stream, and having very confined banks, it is subject to overflows. During some time in 1825 this occurred, when it swept away more than ten thousand tents, including inhabitants and their flocks that were encamped upon its banks. The water is very clear from passing over a gravelly bottom, excepting during the rainy season it is fordable in some places; the best is that by which we crossed, and which is about three miles above Girisk: it is known from there being a number of high poplar trees close upon the left bank. Here the river divides into three branches; the eastern one of which is deepest. Artillery might cross over, but not without unloading the waggons. It is surprising that there are no ferry boats, considering it would not be difficult to construct them, as the neighbouring hills would furnish sufficient wood, but the Affghans have not sufficient foresight to see the utility of it.

Girisk is a good sized place, situated about $\frac{3}{4}$ of a mile from the Helmund, but which formerly washed its walls, the intervening space being now rice fields; it is defended by a fort, on an elevated site, and which commands it; it is of no great strength, and could offer no resistance to Artillery; the side which faces to the East, is on level ground, but the other three has it much broken, and by taking advantage of the ravines, they can be approached to a very short distance; in addition to which the fort might be mined. It was built by Peerdil Khan, one of the present rulers of Candahar; it is the principal seat of the Barikzyes, who inhabit the banks of the Helmund: this tribe has become the most powerful in Affghanistan; its chiefs having dethroned Mahomed Shah, have divided amongst themselves the provinces of the kingdom, which they rule despotically, and live in a perfect state of independence. Here we were subject to a most rigorous examination; the people of the custom house actually searching us to the very skin, and for every sequin found on us taking at the rate of five per cent. and every laden animal was taxed at two sequins, the vagabonds practising every kind of fraud to impose upon the merchants, and even confiscating a part of their wares. From Girisk to Candahar it is not more than 20 pharsacs; the road is generally over a very barren soil; the Firaz mountains are still in sight, and which here join the Shah Macesoond mountains, from

these latter two other ridges branch off to the S.W., which enclose the district of Macevend, famous for its fruits, and above all, the pomegranate. On reaching Koosh-Nakout, we found ourselves upon a spot, which was admirably calculated to defend the city of Candahar on the West. From this is visible the Arghanab river, running to the West, and which empties itself into the Helmund about four pharsacs below Girisk. The country which extends to the South, is covered with sandy hillocks for about forty pharsacs as far as Neski and Karon, situated in Beloochistan, and from whence the Candaharians procure camels and dates. The right bank of this river shews many rich villages; the principal are, Lenguissar, Kolk, and Pachemour. On examining the course of the Arghanab, I could not fail to remark the great error into which Danville has fallen, in making a pretended river rise at Candahar, to which he gives an eastern course, eventually falling into the Indus. Foster has likewise given to this river a false direction.

I observed, that all the rivers which are in this province, such as the Arghandab, the Turnuk, the Arkassan, and the Doree, pass to the West, and discharge their waters into the Helmund. I presume the Arghandab is no other than the Arachotus of the Greeks, because they say, it fell into a lake; its source is at the Goolkoo mountain, in the district of Naoor.

After having forded the Arghandab, we entered the plain of Candahar through the pass of Chehul Zenec, so called from forty steps which lead to a grotto, situated at the end of a hill close to the right, and which the Affghans say, were excavated by a descendant of Tamerlane. This point also presents an admirable defence to the city of Candahar; the numerous canals which intersect it would be difficult to pass. There is still to be seen the ruins of a small fort, which formerly defended this entrance. From the end of the hill, the view is most picturesque, on one side you have below you a superb valley, covered with meadows and gardens, and on the other the vast plain of Candahar; nature has here been prodigal, the water of the Arghanab, fertilising the country by innumerable canals, the principal of which are the Noodseezan and Patab, the last, before reaching the city, passes by the village of Shah Dooteran, and is full of grains of mica.

The city of Candahar was built by Ahmed Shah; in the construction of its buildings which in general are of no solidity, and with little taste,

it is easy to see that they were erected in haste, and without any ornament. Two principal streets run through it, crossing each other at right angles, and meeting in the centre of the town, which is called the *Chir Sen*, over which is a lofty dome, from whence the streets face the four cardinal points ; they are broad, and are intended to have been grand bazars, but have never been completed, and in their places have been built miserable huts. The only building in Candahar worth noticing, is the tomb of Ahmed Shah, which is surmounted by a handsome octangular dome ; the garden that surrounded it, has been entirely neglected.

The population of this city may be reckoned at twenty-five thousand souls, composed of Affghans, Persians, Belpochees, and Hindoos ; who are distinguished from each other by the form of their head-dress ; the first are most numerous. I observed that the females are kept more secluded than in Persia. It is very rare to encounter women in the streets ; those that go abroad, are of a tribe that practice medicine, and bleed the sick. Among the crowds that are seen in the bazars, are many half-witted creatures, that are perfectly naked, and whom the Affghans treat with great consideration, considering them to be inspired by God. They are called Houlliads, that is to say, Saints ; at their death, tombs are built over them, which eventually become places of pilgrimage to the people of the country ; this is why so many places of this kind are to be met, particularly at Candahar. The principal ones are those of Shah Masesond, Baba-Wallee and Huzrutgee, the first is about ten pharsacs to the North, upon the range of hills which bears the same name. They there find small yellow stones, transparent and like amber, with which chaplets are made, and are in great request among the Affghans ; other colours are found, but not of so fine a water as the first. Candahar is not commanded from any point ; it has a wall for defence flanked by towers, and in pretty good order, but which could offer little resistance to artillery. The ditch which encircles it, is not deep ; it is filled from the Patab canal, which would be easy to turn in another direction by a besieging army, and thereby reduce the inhabitants to their wells, of which there are very few within the town. The ancient city is situated close under the eastern side of a hill, which bounds the plain of Candahar to the west. The remains of the citadel are still to be seen from some distance ; it is now entirely in ruins, and deserted, Nadir Shah having destroyed it. There is to be seen at the

end of the hill the small fort Kola-took, from whence this monarch battered it with his artillery. The siege lasted six months, and would have continued longer, but that the daughter of Shah Hossain betrayed and delivered the fort into Nadir's hands, who, as the price of her crime, had her quartered in the presence of her father. From this fort a number of walls for defence branch off, and continue to the foot of the hill, and which were built to resist the attacks of the Persians. It is supposed that this city is that which Alexander built in Arachosia.

The city Nadir Shah built, is about three miles south of Candahar, and is now also in ruins. The ground of Candahar is very rich, and well adapted for the growth of vines, which is not however sufficiently cultivated, and much less than at Herat; its principal productions are wheat, barley, tobacco, and madder: they also grow maize, peas, beans and oil of sessamum. The banks of the Arghandab are studded with orchards which produce a great quantity of fruit, above all, pomegranates, mulberries, apples, plums and apricots; this abundance would allow of an army halting here for many months; they are all remarkably cheap. Spring is the pleasantest time at Candahar, the heat is great in summer, and above all, when there is a southerly wind. It is remarked, that it only snows here about once in seven years; the climate is considered healthy, excepting in autumn, when fevers are very common.

Amongst the several tribes that inhabit this country, the Barikzyes are the most powerful; then the Achikzyes; and after them the Popalzyes. The first reside in villages, and the others are nomads, the riches of the latter consisting in their sheep and camels.

The true character of the Affghan is better observed at Candahar than at Herat, Cabool or Peshawur, as in the three last places, the number of strangers mixed with them has softened their national traits. If you compare their customs and usages with the Persians, you will find them very similar, as they both follow the precepts of the Koran; but as a nation, one cannot help remarking that they are much rougher and coarser in their manners. The want of civilization amongst them proves that their rulers are always occupied in defending themselves against the attacks of their neighbours, and have never thought of ameliorating their laws. The Affghan has neither the vanity or the politeness of a Persian; so far from resembling him in his easy way, and empty compliments, he is grave, distant, cold in his replies, and even a little too

rude in his manners. Beyond the respect he pays to his master, he looks upon all as his equals, and addresses them without ceremony. A European travelling in Affghanistan, must be immediately struck with the familiarity which exists between the high and low, nevertheless an Affghan is a slave to his master ; beyond this, however, he would rather suffer himself to be killed, than subjected to a foreign yoke. Deriving his origin from a wandering tribe, he practises hospitality equal with the Arab.

He is courageous, and believes himself to be the bravest soldier in the world, on this point he is quite convinced ; he delights, in recounting the exploits of the Dooraneees that adorned the armies of Nadir, and conquered India under Ahmed Shah ; he delights in times of disorder, as it gives him an opportunity of gratifying his inclination to plunder. In religion he is a fanatic, and is as superstitious as a Turk or Persian ; being a Sonnee in the strictest sense of the word, he detests the Persians who are Sheahs. Beyond this, he is tolerant towards other persuasions, above all, to Christians, as he believes in the Gospel, and looks on it as an inspired work. Like the Persian, he puts great faith in dreams and astrology, and possesses equally with him all the prejudices of the Mahomedan ; but still will partake of food with any one of a different sect to his own ; he has no education ; with them, their rulers and priests are the only persons that can read or write ; their books are in Persian. From their youth they are taught to use the spear and the sword, to take a true aim, and to ride well, and this is all the instruction they receive. An Affghan is a good swordsman ; his food is bread, rice, meat and milk ; *kouroot*, (a kind of curd,) is his favorite dish ; he does not indulge in wine, his religion prohibiting it, but he delights in drinking *bang*, and smoking intoxicating drugs, the use of which for the time produces a sort of stupor, which delights the senses, but the excessive use of which soon brings on imbecility of mind ; his dwelling is like the Persians, with this difference, that it is more simply furnished. Their luxuries consist in having fine horses, splendid trappings, rich attire, and above all many retainers. Their costume is much the same as the Persian, only differing in the head dress. The sheep skin cap is here substituted by an unbecoming cap wound round by a large blue turban with a red border, which by the manner of putting it on, points out the particular tribe to which they belong. The

beard they look upon as sacred ; nevertheless in place of allowing it to grow naturally, they cut it to a fantail shape ; they also clip the centre of their moustaches, allowing the sides only to grow to any length.

The province of Candahar since 1818, has been governed by five brothers, Peerdil Khan, Khandil Khan, Sherdil Khan, Ramdil Khan, and Meerdil Khan ; the principal authority is now in the hands of Peerdil Khan, on the death of the latter in 1826. Their troops are about six thousand cavalry, and four of infantry ; with more revenue, it would be easy to double this force. The Candaharians are good swordsmen, but not being disciplined, have no steadiness ; they receive but small pay, and only assemble when wanted. The infantry are armed with sword and matchlock, long, but of small bore ; they have about twenty pieces of cannon almost useless, and without artillery-men to serve them. The rulers of this country seem to have adopted for maxim, to know no other law than their own absolute authority, grasping for money ; there are no means to procure it, that they are not capable of. With them to be rich is a crime, which soon brings on confiscation and ruin. They have debased their coin until the alloy preponderates. All merchants and strangers arriving here, before being allowed to circulate any foreign money, are obliged to get it stamped, paying a tax of 5 per cent. or run the risk of its being confiscated ; also every merchant before leaving this, is forced to have each article marked by an agent of Government, on which there is a fixed rate, evading which, his whole property is seized, and lost to him for ever. It follows that the commerce of this place, which was once so flourishing, has become almost nothing. Candahar was once the “entrepôt” of the produce of India and Persia ; it still receives from India supplies via Shikarpoor ; shawls from Cashmeer by way of Cabool, which are sent on to Persia paying a transit duty, which is generally arbitrary. Silk and cottons that are manufactured here barely suffice for home consumption. The principal trade is in madder, tobacco and dried fruits, which are sent to India.

The road which leads to Shikarpoor is not much frequented by merchants ; it is a difficult and dangerous route, and about 360 coss long ; at the end of this journal, will be found an abstract of the route, given to me by a native of Candahar,* who has often travelled it. This route

* As this route has been travelled now by our troops, a more correct one is substituted.

cannot be considered practicable for an army ; during summer a great portion would perish for want of water ; if it was to be attempted under all hazards, it would be necessary to establish at different points depots of supplies, besides each soldier being furnished with an iron plate to cook his cakes, as done in the East, and every company supplied with a small hand-mill to grind flour ; without these precautions, they would run the risk of perishing of hunger after the first few marches. These difficulties compelled the merchants to select a new line of route further to the North, which passing by Khelat-i-Nassir Khan, through a country inhabited by Beloochees, ends at Der-i-Ghazi Khan, situated on the banks of the Indus. That which leads from Candahar to Cabool, offers none of these difficulties, excepting, that it is not practicable in winter, from the quantity of snow which lays. Although passing through a hilly country, it presents no obstacle to the march of artillery ; it winds through a rich valley, closed in by two ranges of hills having a North-easterly direction as far as Cabool, and running nearly parallel the whole way. The northern range, which is no other than the Paraformisan mountains of the Greeks, is very much more elevated than the Southern one ; this latter seems to abound in metals. The valley is most fertile, and traversed as far as Mokur by the Turnak river, which joins the Argandab. It enjoys a bracing and healthy climate, and this is the reason, that between Pootee and Julduk are still to be seen the ruins of an ancient city called Sher-i-soofa, meaning the city of health. The mountains which extend to the North of the province of Candahar, and the sand hills which go off to the South, make this city the point from whence the two routes to India by Shikarpoor and Cabool lead ; any army from the North, marching to the conquest of Hindoostan, must necessarily pass this, halt, and take proper measures for supporting its further advance.

After forty days' detention, a caravan being about to start for Cabool, we hastened to take advantage of its protection, and quitted Candahar the 28th of October, and in four days found ourselves forty coss in advance, and arrived at Mokur. Our halting places were Pootee, Julduk, Tajee Mookeri ; so far I observed that we passed very few villages, but in their places an infinite number of black tents, inhabited by tribes of Sudoozyes, Alikzyes and Giljies. I remarked, that their women did not cover their faces with that care that those in the

villages did; however, they still wear a veil, which partly conceals their countenance. Their dress is of a peculiar shape, which somewhat approaches to the European. Their hair is divided in front by two long plaits, which with married women are allowed to hang negligently over their shoulders: but before marriage, they are studded with coins, and partly cover the face before strangers.

At Taxi, we were stopped by a chief of the Giljies, who living independently, and under no control, assumes the right of levying toll upon all caravans: the tax is not fixed, but taken according to his own will and pleasure. He was most arbitrary with us, seizing any of our arms to which he took a fancy, and seeming to be much surprised, as well as offended at our attempting to prevent it. The plain about Taxi was the scene of a bloody battle between Shah Zamoon and Mahomed Shah, sons of Timour, and who disputed the throne of Afghanistan; the former in losing the battle, was also deprived of his eye-sight by his brother.

A stranger in passing this country on the approach of winter, would remark the number of poles erected in all the villages, and to which are suspended the carcasses of sheep, salted and hung to dry, as their food during this season; which practice they probably learnt from their neighbours.

The village of Mokur is situated close under the southern face of the Goolkun chain, which defends it from the strong wind of the north; near the village is the source of the Turnuk river, and in which are found plenty of fish of a good kind.

The people of this hamlet are exceedingly obliging, lodging all strangers in their houses, and their cleanliness, so unusual in the East, would make one fancy they were settlers from another country. Six coss beyond the hills, which border the plain towards the south, is the salt lake of Zourmal.

From Mokur we continued our journey to Guzni. In traversing the plains of Kuzabak and Nani, in advance of this, the country is covered with numbers of small villages, each enclosed by a mud wall with small towers at the angles; this manner of protecting the villages is very common in Asia, but above all, in Affghanistan, where the number of civil wars that have constantly taken place, have rendered this mode of defence necessary; as in case of danger, it offers a place of refuge, and enables them to keep what they possess in safety.

Before arriving at Guzni, the conductor of our caravan receiving very discouraging accounts of the state of affairs of the country before us, judged it prudent not to halt there, but turned aside and took the caravan to his own village, which is about six miles from this city. My friend Avitabile and a few merchants, who preceded the main body, not being aware of this alteration in our movements, pushed on and slept that night at Guzni. The next morning at day dawn, we were surprised to see several horsemen enter the village, whose sinister appearance boded us no good, and shortly after, they were followed by another party that possessed themselves of all the outlets of the place. By order of their chief, we were seized, our arms and property taken from us, and the caravan and every person belonging to it conducted to Guzni. On our arrival there we were made to enter a caravanserai, a strong guard put over us, and our effects removed to another place, and had to undergo a rigorous search to ascertain if we had anything secreted on our persons. What surprised me most, was to find that they took no notice of my papers, which I carried about my person in the way Asiatics usually do, and which gave me reason to believe, the vagabonds were only anxious to secure our money. The few sequins found upon me, were seized with great delight. Fortunately, before quitting Candahar, we had exchanged our money for bills upon Cabool, given to us by a merchant, to whom I had been particularly recommended by some acquaintance at Herat, without which, my friend and myself, would have been put to great distress. The next day I was taken before the governor of Guzni, who strictly questioned me as to who I was, from whence I came, and to what place I was going. I answered him readily, and with confidence, that I was a Georgian on my way to India, in search of one of my relatives. On this he commenced bantering me, wishing me to understand, that he was aware of my being an European; he then made me open out all my papers, and shewed me some mathematical instruments and my watch, that had been found with my effects, asking me to tell him the use of them. I pleaded ignorance, and said, that they had been given to my care by an Englishman at Tehran, to be delivered to a friend of his in India. On this he became very serious, desiring me under pain of the severest punishment to tell him where I had secreted my money. I answered him, that having been made a

prisoner, searched, and all my effects taken from me, that I had nothing more in my possession; this seemed to satisfy him, and I was dismissed, under a strong escort, to the caravanserai, where I had the pleasure to find my friend, whom I found had been questioned as well as myself. Our accounts of ourselves were found totally, as before leaving Ispahan, we had agreed upon what should be said, and had also instructed our servants.

That night we concerted measures to attempt our escape; we could hit upon no other plan than that to despatch the servant to Cabool, that our "companions in arms" had sent us from India. He was to find out Nawab Jubbur Khan, brother of the rulers of Affghanistan, and with whom, our friends were on intimate terms, who no doubt would interest himself in our favour. As a further measure of prudence, my friend Avitabile determined, if possible, to escape and accompany him; taking advantage of our people being absent with the horses to water, he scaled the walls of the caravanserai, and contrived to secure two for himself and servant, and managed to effect his escape.

Eight days after, I was agreeably surprised at the governor sending for me, overwhelming me with apologies for the treatment I had received, and reproaching me for having disguised from him the truth. I at first thought it was a trap he had laid for me, but I soon felt myself at ease, when he presented me with a letter from my friend. From this time, he was kind in his attentions, restored all my property, and started me for Cabool, where I arrived the 13th of November. I took up my abode with the noble Nawab Jubbur Khan, (where I found my friend Avitabile,) and whose kind hospitality soon made me forget all the privations that I had lately suffered under his brother.

There are four stages for caravans from Guzni to Cabool; their names are Cheshgos, Shekabad, and Maidan: before reaching this latter, you have to cross a small clear stream, which comes from Azeres, and which after fertilizing the valley of Languered, falls into the Cabool river at Maidan. You come upon a river which is that, that runs to Cabool. From this the line of road to Cabool is well adapted to defensive operations, but it might be turned, if the precaution was taken of marching from Guzni by Goidez and Londgerd. It was at Shekabad that Futteh Khan was put to death. Kamran Shah having a hatred to him, took advantage of his defeat at Kaffir Kola, to deprive him of his eye-sight; but

not satisfied with this revenge, he subsequently had him put to death at this place. This man's fall is still regretted by the Affghans, who speak in terms of praise of his courage, and the able manner in which the affairs of government were conducted under him. Borna Barikzye preserved amidst all his greatness, the simple manners of his tribe, which won the hearts of all about him. To this was added an unbounded liberality. At his death his brothers, to the number of twenty-one, and who were almost all in high situations, revolted; called around them the tribe of Barikzyes, of which they were the chiefs, and assumed supreme power in dethroning Mahomed Shah. Since that time they have divided amongst themselves the provinces of Affghanistan, which they govern without fear of opposition.

JOURNAL

OF THE

ASIATIC SOCIETY.

Extracts from the late DR. VOYSEY'S Journals, when attached to the Trigonometrical Survey in Southern and Central India.

[The Editors have given the present extract, though the last in point of date, the first place, not only from its crossing a tract of country quite unknown, but moreover from its being the volume of the Journal which closes the lamented Voysey's career; this being the journey on which he died on his route from the left bank of the Subunreeka to Calcutta, being brought dead in his palkee to the ghat of Howrah, in a state which shewed that he must have died nearly twenty-four hours previously! The date of the commencement of his fever is noted in his Journal. The specimens collected up to his death are in the Museum.—Eds.]

Mahwilgaon, 11th February.—The soil is entirely black on the surface all the way from Nagpoor. In the bed of the Nag nuddee, I found a great quantity of white felspar, quartz, calcedony and other minerals usually found in trap, the lower part of the bank consisted of a mixture of sand and clay, a very complete separation being visible between the superincumbent black soil and the red underneath. The surrounding country appears to be very rich, and is tolerably well cultivated.

Mahoda, 12th February.—Black soil until I reached Omree, when it became sandy and red, but speedily changed again to the black. Near Mahoda I was attracted by the sound of a water-fall in the Kánhan, and immediately descended its bed. It contained gneiss and granite rock in great quantity, the gneiss porphyritic, containing large crystals of white felspar. Its contractions were very much varied, as

also the inclination of the stratification ; its direction was for the most part East and West as usual. It also contained the usual quartz veins parallel to the stratifications. Nearer the town, and lower down the river, I observed singular masses of hornblende slate, succeeding to, and sometimes mixed with the gneiss. I saw also several veins on the left bank of the Kánhan of a decomposing chlorite schist, the contractions of the gneiss were there also very extraordinary and irregular. The most singular rock is the iron clay, which lies on the gneiss on the river bank ; I was however unable to discover any connection between the two rocks.

Bundarra, 13th February.—The road as far as Kerbie was over black soil. It then became red, and I observed in my path frequent masses of the red ironstone, but I hesitate yet whether its proper appellation is iron clay ; the usual accompaniment of the red soil ; viz. numerous tanks which were tolerably full, gave indication of the former riches of the country. I shot a teal with beautiful white eyes in one of them. I was yesterday deceived in respect to the situation of the range of peaked hills near Bundarra. In the Wain Gunga, I found pieces of gneiss, and here and there masses of the main rock jutting from beneath the diluvial soil. There are numerous tanks and fine groves of tamarind trees at Bundarra.

Bundarra, 14th February.—The *sungum* being more distant than I imagined, I stopped half way at a small hill, on which is a temple dedicated to Rama. The rock was gneiss passing into mica slate and clay slate with mica.

Lacknee, 15th February.—The black soil, entirely disappeared, and in its stead is found that arising from the decomposition of gneiss. The main rock is now and then seen in the beds of rivers and nullahs, but always at considerable depth from the surface. Rice is principally cultivated, and the tanks are very numerous.

Sacholee, 16th February.—The same soil, which allows of very fine roads. For a considerable portion it was very red, and I observed at the side of the road, a great quantity of the iron conglomerate in large masses. It appeared to me closely resembling that of Midnapore. I have before observed, that there is considerable difference between the iron clay found in connexion with basalt, though I believe it to be more apparent than real.

Deoree Kessory, 18th February.—The Dullee Ghaut is composed of chlorite schist, with numerous veins of quartz. The direction of the laminae of stratification is N. E. and S. W., and nearly vertical. Deoree Ghaut is composed of red ochraceous clay slate. About a mile from the summit of the Ghaut, sandstone and sandstone conglomerate is seen. The sandstone resembles that of Gellapoorum, as well as the conglomerate that near Anarum.

The next Ghaut called Deoree, is more steep and elevated than that of Dullee. It is about 300 feet above the plain, and in one part is very steep, the rock is red ochraceous clay slate with veins of quartz. A very small portion of the rock is bare, and speedily is lost under the immense deposits of diluvial soil. The change from gneiss to clay slate probably takes place between Lacknee and Vergoonee.

Burra Bunjarra, 19th February.—In the bed of, and on the banks, of the Beg nuddee, I observed large masses of a bluish coloured quartz rock or flinty slate. This appeared frequently, afterwards, crossing the road, accompanied by common quartz rock which was the only rock I observed between that place and Burra Bunjarra. Close to my encampment large masses of the common-bedded granite of India and a greenstone vein, as usual, which I have been able to trace for upwards of quarter of a mile.

The granite is exactly like some Hyderabad specimens, but the green stone vein does not run E. and W. but nearly N. and S. The hill of Woerarbund bears nearly due East from my encampment. The water of this place is detestable. If a well were dug it would be better. I am informed that many attempts have been made to procure water, but they have failed on account of the badness of the stone beneath.

Woerarbund, 20th February.—The road lay over granite similar to that of Burra Bunjarra, the masses appearing very rarely from beneath the alluvial soil. At Chichowlee nullah, quartz rock and a trap vein. The hills on each side of the road were of granite, and externally resembled that of Koppa, the bedded masses inclining to the form of tors and logging stones. The new road is impassable on account of the long grass which completely covers it, the old road after several circuitous windings rejoins it two or three times. For three coss after passing Chichowlee, the soil is black. In my immediate neighbourhood is a quartz hill, from it I see the hill near the Beg nuddee,

and in the evening I shall probably see that of Deoree. The quartz is intimately mixed with felspar, which is sometimes found in separate clay slate, exactly resembling in some specimens that of Kerajah last year.

Doorooog, 22d February.—Alternation of black soil and of pisiform iron ore, reminding me of that in the neighbourhood of Sheelapily. The face of the country as bare and destitute of trees as in the neighbourhood of Sholapoor. In the bed of the Shiwer nuddee, a reddish clay slate, the bed was composed of siliceous sand, and the banks of brown argillo-calcareous soil. In my vicinity are numerous excavations of considerable dimensions for the purpose of making tanks, the bottom about 50 or 60 feet below the surface; in one, S. E. of the town, is a thick layer of limestone of a reddish color, which at first appears to be a kind of breccia or pudding stone, but on narrow inspection, it is evident, that the whole consists of a thick bed of oyster shells which have been in some cases completely petrified, and changed into a compact limestone; and in others on fracture, conchoidal laminae are very distinct. Perhaps it will be difficult to convince some persons that these are really petrified oyster shells, but I have not the slightest doubt, that an experienced geologist will at once admit of the fact. It remains to be ascertained, whether the rock has a bituminous or ammoniacal smell before the blow-pipe; they appear to differ very little from the shells at Miaglah Condee, except that in this instance they are entire, whereas at the former place, they are broken; here also they appear to have been compressed. The bed extends beneath the diluvial soil as far as the bed of the river, where there are a few scattered blocks.

Ryepoor, 23d February.—In the bed of the Karoo nuddee, I observed the shells, and in one bank, in particular on the right bank of the river, they were particularly distinct, owing to the polish which the stone had received from the friction of running water. The soil alternated from the red or decomposing pisiform iron ore to that of the clay slate and sand.

Ryepoor, 28th February.—On the 24th I visited the Karoo nuddee, about 4 miles S. W. of Ryepoor. The bed of the river was principally formed of the shelly slate limestone, but the masses did not present the same distinct outline which I observed further

up the river. I occupied myself during the day examining the quantity of lime contained in sixty grains, and found it lost 15, which is equal to 25 per cent.

I observed alternations of black and brown soil, but the nullahs did not afford any indication of the substratum. Here and there, however, pieces of the shelly limestone were seen in separate blocks lying on the surface. On inspecting the wells dug by Col. Agnew and Captain Hunter, which were about 50 feet deep, the first rock was the shelly limestone and afterwards a clay slate, with a various admixture of lime decomposing on exposure to rain and sun, the split masses affected the rhomboidal form. To the N. W. of the cantonment there is a large stone quarry. The rock is sandstone passing into clay slate. The sandstone is very slaty, and breaks into rhomboidal pieces; it is easily quarried, and would I think be cheaper than bricks.

Chandcoory, 29th February.—On my road hither, I frequently saw isolated masses of the shelly stone, but in no place the main rock. The soil was alternately black, brown, and pisiform iron ore.

Bhainsa, 1st March.—My course was to-day N. E. by E. over the same kind of soil, and loose masses of the shelly limestone, which are probably transported. All the villages on my road are supplied with water from tanks.

Duttaum, 2d March.—At Sindora, a half-dug well shewed red clay slate, and this was the only spot in which I saw the main rock; nothing else being visible but the brown diluvial soil.

Lowun, 3d March.—The hill S. E. which I saw from Bhainsa is Sonakani; there was formerly a gold mine beneath it; my course is due East to-morrow; my course to-day was N. E. by E. $\frac{1}{2}$ East. This village was formerly very flourishing. It was plundered in the time of Sewajee by the ruler of Sonakani, and has since gradually sunk to ruin. The black slaty limestone, which is spread about in detached pieces in great quantity, is said to lie under the diluvial soil, and is also found on the river Mahanuddee.

Kotinghy, 4th March.—In a nullah near Lowun, black calcareous clay slate, and on the right bank and bed of the river, precisely the same rock. The bed consisted of coarse granitic sand. The course of the river is nearly due North, and is two furlongs wide.

At present the pools are all stagnant, and I did not observe any stream or motion in the water to direct one. The name of the village on the river bank is Kurwa, there is a temple, whose size shews, it was not always in its present ruined state.

Beliagurh, 5th March.—Clay slate like that of Kotinghy in the beds of nullahs, sometimes in the road, and is succeeded by a reddish sandstone. And I have little doubt that were it not for the abrupt disappearance under the brown diluvial soil, that I should be able to observe the same gradual changes I have noticed in the Dekkan. At a village called Kosoola, which stands on a hill of sandstone, the rock was in large masses, and rather slaty, like that at Raupoor; I am convinced that the rocks of this formation are contemporaneous with and prior to the granite. Nullahs have now commenced making their appearance since my approach to the hills. I shall cross the outgoing of the range to-morrow. At Poorgaon, Dalliapuhar, a remarkable peak, and Sonakani, bore, the former North and the latter South.

Tanreepar, 6th March.—I crossed the Pass of Silmar, a little beyond Jora Devi, the ascent is trifling, the road good. At Jora Devi the red granular sandstone. In the Pass, sandstone conglomerate immediately followed by the clay slate and shelly limestone. At Belaipoor the rocks had a most remarkably mottled appearance, arising from large masses of calcareous clay slate enveloped in a paste of quartz, in grains containing small pieces of the same rock; very few of the masses seem much rounded by attrition. The space occupied by the rocks was about a furlong square. At a short distance appeared the usual sandstone followed by the calcareous clay slate. The Pass which I crossed to-day is in the range of hills whence I first got sight of Bhyesah, and as I have been travelling N. E. and E. their course is nearly S. W. and N. E.; the intimate resemblance in outline and structure, with the sandstone hills of the same formation.

I observed no rocks until I reached Sarunghur, where large masses of sandstone were exposed.

Laindurrah, 8th March.—Sandstone appears to be the prevailing rock, however, at the top of the Pass the calcareous clay slate seems most to abound. In the beds of nullahs, the horizontal clay slate is almost invariably seen. It is, generally speaking, the lower-

most rock. The sandstone exactly resembles that of the Silman Pass; in one or two places I perceived sandstone conglomerate, but in small quantity.

Cordenah, 9th March.—About two miles South of Laidurrah commences the Cootie Cales Ghaut, which is not so extensive as that of Deosir. It is composed of sandstone, beneath which is clay slate, although it is usually exposed in the same manner as at Deosir, between Genewlah and the Pass. After passing over sandstone conglomerate, I came on large bedded masses of granite, which appeared occasionally the whole distance between its first commencement and this place. Its junction could no where be observed on account of the thickness of the diluvial soil. The granite contains a considerable portion of felspar and white mica, the quartz is least in quantity.

Kalapan, 10th March.—Between Ordunnah and Cheereegaon, granite with felspar and white mica. In one spot a trap vein of the usual kind. Near Cheereegaon I observed concentric lamellar granite, similar to that of Hyderabad. It generally appeared in large bedded masses. The bed of the nullahs and rivers were composed of granitic sand.

I observed some masses of the laterite, very similar to those of the banks of the Kanhan at Mahoda. The range of hills, which appear to the Northward, are called the Baruh-puhar; the Maha Nuddee runs on the other.

Sumbulpoor, 11th March.—On my road hither, I frequently observed the granite and the usual trap veins. Shortly after approaching the termination of the Baruh-puhar range of hills, I observed gneiss, which appeared to lie in planes of stratification parallel to the range. These appearances continued as far as the bed of the river, which is covered with masses of gneiss. The bed of the river consists of sand not much comminuted. In this bed the diamonds are sought for; they are found in a black sand below the upper sand. It is said that no diamonds are found in the river above the confluence of the Eeb, and it is supposed that they have their origin in the rocks in that river, or on its banks. The Company have the right of search, and in their hands it is not at all productive. The Rajah of Sumbulpoor offered a rent to the Company for right of search.

Sumbulpoor, 16th March.—I went this day to visit the diamond

mines; the Rajah's Dewan had told us, that the principal place of search was at the junction of the Eeb river and the Maha Nuddee; nevertheless we were taken to a place in the bed of the Maha Nuddee considerably below it, and where it runs between a large island, called the Hira Coond, and the prolongation of the Baruh-puhar hills. We passed through a continued extent of forest land, in which I observed the ebony tree, the saul, some small teak trees, the Pavetta Indica, the Pulas in full bloom, &c. &c. We crossed the Maha Nuddee to a large island, and after going two miles in a N. W. direction, came to another island, which we soon crossed, and arrived at the huts of the guard and workers of the mines. The miners were at work in the bed of the river, about one mile below this spot. I was informed that they were directed in their search by the presence of a blackish earth under the sand, in which was found rounded pebbles of all sizes, from one foot diameter to one inch. They were principally composed of clay slate, flinty slate, jasper and jaspery ironstone. A bund is formed to stop the water, and the earth which is dug out is carried to a spot where a running stream is made to pass over it. The sand brought down by this means is subjected to search in wooden shovels; no diamond had been found for a considerable time.

Kutterbugga, 20th March.—Course at N. E. between Sopun and the Gher Gattee. I passed over some argillaceous limestone, which in one place bore a slaty character; the Pass of Gher Gattee is composed of quartz rock. In several places on my road, I observed laterite, but could no where discover its connexion with the rock beneath. My course was N. E.

Somasinghur, 21st March.—In the beds of all the nullahs I observed gneiss, also I frequently came on lumps of the laterite, but never observed its connexion with the gneiss. The soil is for the most part sandy.

Chippadhee, 23rd March.—Considerable quantities of hornblende schist in the nullah, evidently subordinate to the gneiss.

Kotooniah, 25th March.—The gneiss in some places passes into a mica schist, and contains moreover numerous beds of hornblende schist, and a few of quartz rock. This and clay was not so frequent, as I have before observed it.

Raootpalee or Hatteebar, 28th March.—The road was very uneven,

and stony, and the turns very numerous to ascend the ravines; the rock gneiss passing into mica schist with numerous veins and beds of quartz rock. The latter part of the Jam Ghattee Pass is of hornblende schist, without any admixture of either felspar or quartz. Nothing can be more erroneous than Arrowsmith's map, as it stands at present. The dip of the gneiss is Southward, and the plane of stratification E. and W.

Chunook, 2d April.—At Oargah, the gneiss is laid bare to a considerable extent. In the bed of a nullah, I observed several quartz veins.—To Direcola is through a very deep forest without any cultivation, except in a small spot near Direcola. The rock is gneiss hornblende schist, and quartz rock repeatedly alternating.

Cheekurdurpoor, 3d April.—The rock around this place is gneiss, with a considerable quantity of quartz intermixed.

Sureekela, 6th April.—On the road from Kishenpoor I saw gneiss in the beds of all the nullahs, and a kind of clay stone lying in a bed in the gneiss near the Soonjee; this change is analogous to that which takes place in the granite at Hyderabad, from greenstone into the potstone. Numerous large beds and elongated veins of white quartz; it is not improbable that metalliferous ores exist in this rock. It has been found the richest in metals of all the Indian rocks. At Callastry it contains lead ore mixed with silver; at Nellore, copper; at Nagpoor, manganese and lead ore and copper; micaceous iron ore is a very common product of this rock. The iron clay which I observed at Mahoda, and in many places along the great road, has not been seen since I left Sumbulpoor. I did not stay long at that place to ascertain its habitat; but I was informed that it was found on the summits of some of the hills in the vicinage. From the facility with which it is wrought and its durability, it is always preferred to other materials; great part of the building in forts at Sumbulpoor is of this stone.—At Suraukbela, granite exactly resembling that found in some parts of the province of Hyderabad.

Idkull, 7th April.—Granite, of the lamellar kind sometimes passing into gneiss is the universal rock intermixed with beds of quartz rock, and the greenstone veins and beds. In one part I observed a large grained decomposing granite, composed of large amorphous crystallizations of white mica, felspar and quartz.

Bapmara or Bagmara, 8th April.—I came over the concentric granite passing into gneiss, and numerous trap veins. The tank water here was remarkably bad.

9th April.—Cooliana, left bank of the Soobunreeka, I passed a large nullah. In this short march of only nine miles, I passed large masses of quartz rock lying in gneiss and mica schist, and found in the bed of the river Soobunreeka, mica schist, with large veins of hornblende rock and greenstone.

Cooliana, 10th April.—I found the rocks of the Ghaut were mica schist, with veins and beds of quartz rock.

Dhadka, 11th April.—I passed through the village of Narsingpoor, where the manufactory of the chlorite schist into cups and plates is established; the stone is found in the neighbouring Pass of Narsingpoor. I purchased one small cup for 5 pice; they are first of all cut into their proper shape with a chisel and knife, and subsequently turned; many are spoiled in the first part of the process. The Pass of Narsingpoor, already about 300 feet above the village, is composed of mica schist passing into clay slate. I observed this rock the whole distance to Dhadka, containing veins and beds of white quartz.

12th April.—Rocks of Coliapal. The same mica schist with quartz veins. One specimen of quartz reminded me of axinite.

Geological Remarks during the March from Benares (Old Road,) via Hazareebaugh, Bankoora and Burdwan to Barrackpoor. By Dr. J. Row, B. M. S.

After crossing the Soane river at the village of Baroon, situated on its right bank, marched through Nourungabad to the village of Munurpoor, close under a range of low hills, composed of grey granite; passed next through Sherghatty and Ghurwya, during which stage passed over an undulating country, with here and there masses of granite peeping above the surface. Range of hills running East and West, about a mile distant from the village. We next proceeded to Kanachuttee fourteen miles, during which march we ascended the Dunghye Pass, ascent about five miles, composed entirely of gneiss from bottom to top.

From Kanachuttee to Penarkoon, near the encamping ground, found micaceous sandstone, very friable and slaty, also the same rock in a little declivity towards a nullah S. E. as well as in the nullah, and hornblende rock. Thence to Kutkumsandy at the 251st mile stone, during this stage, at about five miles from camp, reached the village on the right called Dewuree, near to which had to cross the Bulbul River, about 100 yards in breadth. On the left bank, at about 50 yards distant, is a hot spring, situated about twenty feet above the river; water bubbled up when a stick was inserted, and appeared to be about the temperature of 115° or 120° ; but I had not a thermometer at hand to prove it. Taste sulphureous and slightly salt, and emitting a sulphureous vapour. Bed of the river ankle deep, and a small stream at this season (February) with rather precipitous banks. Ascent nearly the whole way. About half way, met with greenstone and hornblende slate, quartz rock was greenish grey and compact and porphyritic in the bed of the Bulbul, with patches of red, light and dark, resembling jasper. The rock behind the village of Kutkumsandy and bed of the nullah composed entirely of gneiss.

Our next stage was to Hazareebaugh. At three miles from encamping ground commenced the ascent of the Kutkumsandy Ghaut, distance about three miles from bottom to top. Rock composing the Pass consisted of gneiss at the top, quartz rock abounded, coarse and fine grained, advancing into the table land, quartz rock seen in every direction from Hazareebaugh to Deigwa, ten and three-quarter miles. At about three miles from Hazaree began to descend gradually. Passed some detached hills half-way, of gneiss, also in the beds of the nullah; but further on, on the higher parts, white quartz rock appeared. About half a mile from Deigwa found a steep hill consisting entirely of crystallised quartz rock, of white and rose color, separate and mixed in layers, which was very beautiful. The bed of the nullah at Deigwa was composed of gneiss.

We next proceeded to Chuttroo Chuttee, thirteen and a half miles. Road very undulating all the way, some of the ascents very steep; crossed a Pass called the Tootkee Ghaut, up to a telegraph close to the road, about a mile and a half in length. In the Pass found gneiss fine grained and light coloured. The surface of the country covered with quartz rock and gneiss. The beds of the nullahs also consisting

of gneiss and hornblende, and the substance No. 2, which Mr. Piddington has found to be corundum, and on some heights on the left, about half way to Chuttroo, I found in large quantities quartz rock with corundum (No. 4,) of pure white and greenish grey color imbedded.

In a nullah at Chuttroo running S. to N., the bed formed of contorted gneiss, and containing large plates of mica, and here and there hornblende. Inclination East to West. It is as well to mark, that there was a short avenue of trees at the entrance to Chuttroo from the Deigwa side.

From Chuttroo to Goomea thirteen and a half miles; encamped here; the dak bungalow at the two-hundredth mile stone. Crossed in this stage six wet nullahs, and came down the Tilla Pass; gentle descent the whole way. The surface of the hills covered with quartz, bed of the nullahs and declivities shewing coarse gneiss with large proportion of mica. At the village of Goomea, the higher places covered with strata of coarse and fine grit stone, containing portions of felspar and mica; also micaceous sandstone at the dak bungalow; a range of hills West of camp three koss, called the Soogoo range, and one hill N. E. visible since leaving Hazareebaugh seven koss from hence, called Parisnath, at the foot of which is said to be the town of Palgunj. Went to the bed of the Borako river, one mile South, which emerges from the Soogoo range, and during its course brings down specimens of coal, as both that mineral and black micaceous sandstone and shell were found in rolled specimens in its bed. The ravines running into the river, and its bed, faced with strata of sandstone, as if done by art.

The next stage was Augbalee, thirteen miles, at the one hundred and eighty-seventh milestone.

From Goomea descended into a steep nullah with little water, and about one and a half mile crossed the Borako river; five miles further over rather even country, but descending gradually, crossed the sandy bed of the Damooda river, thence to Augbalee six and a half.

The surface of the country covered with quartz rock; one of the nullahs half way between the Damooda and Augbalee, contained hornblende rock and greenstone, with veins of quartz and some mica. The rest consisted of gneiss.

A hill immediately S. of the bungalow consisted of gneiss, the ingredients of which are all white. Mica, quartz and felspar, also at the base, some blocks of foliated quartz.

The bed of the nullah below had beautiful vertical and horizontal strata of gneiss, with veins of greenstone and white and red quartz and felspar. Inclination of strata E. and W. across the nullah. In this nullah were found specimens of No. 2, which Mr. Piddington has named a variety of corundum.

We next proceeded to Chass, fifteen miles, encamped West of the bungalow, between that and the nuddee. In the ravines S. of camp and opposite side of the road, the ground strewn with beautiful masses of quartz crystals and foliated quartz combined. Some very large masses. In the nullah West of camp 200 yards, found the same beautiful varieties of gneiss, and containing large blocks of foliated quartz. In the bed of the nullah, the strata were as it were uplifted, turned vertically, while those on the banks were horizontally placed. Between camp and the nullah off the road on the right came upon the commencement of a tank, and found large quantities of large and small masses of globular greenstone.

From Chass passed through Chundunkeearie fourteen miles, to Dobra twelve miles; the country became generally flat and level, with here and there granite rock above the surface. The beds of the nullahs containing gneiss, about four miles before reaching Dobra, but with a rock of greenstone at the foot of which was a telegraph tower. The encamping ground at Dobra covered with quartz and mica, and here and there patches of gneiss, and in the bed of a tank which was digging near the village, the red clay contained enormous quantities of mica schist, containing crystals of schorl in large proportions, this schist was quite soft when removed from the soil, and became speedily hard on exposure to the air.

At Rugonathpoor, ten and three-quarter miles further over a flat country, with here and there rocks of gneiss, encamped under the Rugonathpoor hills, three or four conical-shaped masses of bare rock, consisting of gneiss, at the foot of which is the town, large and populous.

Some rocks between Rugonathpoor and Siljam, twelve and three-quarter miles, here gneiss with veins of hornblende.

We next proceeded to Chatna thirteen and a half miles, on the road, the beds of the nullahs contained some dark coloured gneiss, with greenstone here and there, and the surface of the country quartz rock.

At Bankoora found gneiss in patches above the surface, and in some ravines North of cantonments found nodules of iron clay, (laterite,) with blocks of crystallized quartz rock in an apparently vitrified state, and of a grey color.

The iron clay was also seen in the next state from Bankoora, viz. Bulleatore, and also in one or two places gneiss.

4.

ROUTE.

Miles.

Sherghatty,..	.....	.....	to
Ghurway,..	..	..	12 cross the Boorun and Fulgo rivers.
Kanachuttee,..	..	..	14½ ascend the Dunghye pass.
Penarkoon,..	.....	.....	8½
Kutkumsandy, ..	..	..	9½ cross the Bulbul river.
Hazareebagh, .	..	..	12½ ascend the Kutkumsandy pass.
Deigwa, .....	.....	.....	10½
Chuttroo Chuttee,.	..	..	13½ descend the Tootkee pass.
Goomea,.....	..	..	13½ down the Tillia pass.
Augbalee,..	..	..	18½ ford the Borako and Damooda rivers.
Chass,.....	.....	.....	15
Chundunkeearce, ..	..	..	14
Dobra,.....	.....	.....	12
Rugonathpoor,.....	.....	.....	11
Siljam,.....	.....	.....	18
Chatna,..	..	..	13
Bancoora,.....	.....	.....	9

A Geographical Notice of the Valley of Jullalabad. By Capt. G. H. MacGREGOR, C. B.

Geographical Notice. 1. The country which is subject to the control of the Governor of Jullalabad is the valley of the Cabul river, but it is generally termed Ningrahar, or Nungnihar, the former being a corruption of the latter word, which signifies in the Affghan language nine rivers, or rivulets, and has reference to those by which the valley is intersected.

Boundaries. 2. The Khybur mountains cross the valley at its eastern end; the snowy ridge of Soofaid Koh forms its Southern boundary; the hills of Kourkutchah, and Seah Koh, and the desert of Gumbeer, trace its Western limits; and on the North it is bounded by the primary and inferior ranges of the Safee and Momund hills, which are separated by the Coshkote river.

3. The Cabul river flows through the Northern part of the valley, and its direction is East by South, and West by North; on its left bank from Lalpoorah to Kama, a distance of about thirty-five miles, lie the Momund, (Be-doulut) hills; in some places they form ridges which advance and overhang its banks, and then bend back and form the plains of Goshta and Kama: at the confluence of the Hoshkote and Cabul rivers, the valley opens out to the North, and forms the fertile districts of Shiwah Shegee and Beysoot; the two latter are divided by a low ridge of barren hills, called Tungee Phagoo. The Northern boundary of Shiwa, which skirts the Safee hills, may be estimated at fifteen miles from the left bank of the Cabul river, and the mean width of these districts, limited on the East by the Koshkote river, and on the West by the Gumbeer desert at six miles. This part of the valley is not generally considered as belonging to Nungnihar, but as it bears on the Koshkote river, which is one of those that give origin to the term, it seems to me to be very properly included under the denomination

4. On the South side of the Cabul river are the plains of Jullalabad, Chardeh, Butteekhote, Besh Boolay and Dukka. The first mentioned are divided by the Alee Boghan hills, termed by the natives 'Soorkh Dewar;' these cross the valley, and form a low connecting ridge between the Momund hills and the Soofaid Koh. The plain

of Butteekote is joined on the North by that of Chardeh, and the country to the South of it, and of the plain of Jullalabad, slants up to the base of the Soofaid Koh. Besh Boolay is included in this highland, which Lieutenant Wood of the Indian Navy, describes as embracing all the rough and broken ground between the Khybur and Kurkutch ranges, and estimates its length at fifty-nine miles, and its mean width at fifteen.

5. The small plain of Dukka lies on the Western entrance of the Khybur pass; the Cabul river marks its Northern boundary; Dukka. it is enclosed on all other sides by the inferior ranges of the Khybur hills (Khoord Khybur); the high road from Dukka to Jullalabad defiles Westerly through the hills, and at the narrow part of the pass, a Thanah of Momunds is stationed for the protection of travellers; on debouching from the defile the road leads out on the Geerde country, passes on to Huzurnow and Bersawul, and opens out on the valleys of Butteekote and Chardeh.

6. The plain of Butteekote is little else than a stony desert; that of Chardeh is more fertile, on the North of which flows the Butteekote. Cabul river. Mar Koh, or serpent hill, limits its Eastern boundary; on its West are the Alee Boghan hills, and South lies the Butteekote desert; its length may be estimated at nine miles, and mean width at three and a half.

7. To describe the plain of Jullalabad, I will quote from Lieutenant Wood's report on this part of the country, submitted to Government in 1833.

"A ridge of hills called Deh Koh, or the black, rises about Jugdulluk, and running East by North till it meets the Cabul river, bounds the plain of Jullalabad on the North; to the South it has the highland of Nung Nuhan; East it has the hills of Alee Baghan and desert of Butteekote, while its Western limit is marked by ridges which here project into the valley of the Soorkh Rood.

"The length of the Jullalabad plain is twenty-five miles, and its width does not exceed four miles. A plain situated so high up the temperate zone, with snowy mountains in sight on the North and South, producing all the vegetable productions of a more Southern clime, is one of those exceptions, resulting from local influences, that are often found to militate against received opinions regarding climate.

From Jullalabad to Gundummuk, the distance is twenty-eight miles, and the difference in the elevation of the two places is 2830 feet, the former being 2170 feet above the sea, and the latter 4150. Travelling from the plain of Jullalabad, the change from a hot to a cold climate is first perceived at Gundummuk; so sudden is the transition that natives affirm it snows on one side, while rain falls on the opposite."

8. The following rivers intersect Nung Nuhan :—

1. The Soorkh Rood, or red river.
2. The Gundummuk ditto.
3. The Kurrussoo ditto.
4. The Chipreeal ditto.
5. The Hisaruk ditto.
6. The Kote ditto..
7. The River of Momund Durrah,
8. The Kashkote, and
9. Cabul rivers.

9. The Soorkh Rood rises in Bara Koh, flows through the Hisarut district, joins the Gundummuk river at Tuttung-i-Mahomed Acbar, and falls into the Cabul river at Durrounta; it is called the red river, from the colour of its water; it is fed by tributary streams at Tootoo, Baghwanee, Tuttung and Bala Bagh. The Soorkh Rood is not navigable.

10. The Gundummuk river rises in the Soofaid Koh; it is joined by streams from Moonkhee Kheil and Koodee Kheil, it flows by Gundummuk, and falls into the Soorkh Rood; at Killa Alladad Khan it is not navigable.

11. The Kurrussoo river rises in the Soofaid Koh, runs through the valley of the Wuzzeeree Khoogeeanee, passes Kujja, Behoor, and Futtehabad, and flows into the Soorkh Rood close to the town of Bala Bagh.

12. The Chipreeal river rises in the Soofaid Koh, a little above Pucheea, flows by Agan, Chipreeal and Heidah, and joins the Cabul river about four miles to the Eastward of Jullalabad, at Serai-i-Khoosh Gombuz.

13. The Hisaruk like the rest rises in the Soofaid Koh, above Muzeena, runs past Hisarshace, Burroo and Bareekal, travels on to Chardeh, and sinks into the Cabul river at Lachoopoor.

14. The Kote river rises in the Soofaid Kote, its course is by Khunder Khanee, Butteekote, Chardeh, and falls into the Cabul river at Killa-i-Khalid Khan.

15. The river of Momund Durra rises in a valley from which it takes the name, and which is situated among the inner ranges of Soofaid Koh. This river flows past the Nazeean valley, and the Sheinwaree forts of Besh Boolaly ; it branches into two streams near Busawul ; the larger one falls into the Cabul river at Busawul, and the smaller one flows in the direction of Huzarnow, and exhausts itself on the cultivation appertaining to that place. This river forms the limit of the Cabul valley on the south-eastern side, paying revenue to the Government.

16. The Kashkote river is said to rise near the source of the Oxus ; it flows through Kashgar, Chughurserai, Koonur and Kashkote, and joins the Cabul river near the village of Kama. During the summer on the melting of the snow of the Safee mountains, this river is not fordable ; timbers are floated down from Chughurserai, Koonur and the Safee valleys to Jullalabad. Rafts of inflated cow hides also float down the river, bringing grain, iron and other articles, supplied from the Bajore and Koonur countries.

17. The Cabul river in its course receives several considerable rivers, the Punjsheer, Ghorebund and Loghur streams ; besides those intersecting this valley are its tributaries ; in summer it flows with great violence ; it is fordable only from November to April. Rafts of inflated hides float with the current, and convey people and goods from Jullalabad to Peshawur. Rafts cannot stem the current. On the journey down the river being accomplished, the raftsmen take the hides out of the water, allow the inflated air to escape, pack up the hides, and return with them by land, either laden on jackasses, or upon their own shoulders.

18. These streams, with the exception of the Soorkh Rood, Kaskote and Cabul rivers, are more properly termed rivulets ; they are chiefly fed by the melting snows of the Soofaid Koh. Canals conduct their waters over the country through which they flow, and spread fertility

wherever their influence extends. Several of these streams during the summer at the period of the rice cultivation, are exhausted before they reach the Soorkh Rood, or Cabul river, to either of which at other seasons they form tributaries.

19. The distance of Dukka to Soorkhal, by the high road, is $77\frac{1}{2}$ miles, *vide* subjoined table of routes furnished me by Captain Paton.

20. The low hills of Jullalabad are extremely barren, but the lofty ranges of Koond, Kurkutchah, and Soofaid Koh, are richly clad with pine, almond and other trees, which supply the market with excellent timber.

21. The highest peak of Speenghir, or Soofaid Koh, is stated by Lieut Wood at 14,100 feet above the level of the sea. The same officer talking of the people who inhabit the hilly country, says,

“To see a stream well conducted along the face of a hill, 25 feet above the mean level of the valley below is not uncommon, and where no rivulets intersect the valleys, a running stream is procured from *karezes* or wells. The appearance of these sequestered valleys is a mixture of orchard, field, and garden. They abound in mulberry, pomegranate and other fruit trees, while the banks of their streams are edged with a fine healthy sward, enamelled with a profusion of wild flowers and fragrant from aromatic herbs; near the forts they are often fringed by rows of weeping willows.”

22. The plains of Butteekote, Geedee, Goshta, Chardeh, Lookhee and the country skirting the hills, afford good pasturage. The pastoral Ghilzies bring a great number of camels and sheep to these districts in autumn, and return to Cabul in the spring.

23. The principal towns and villages in the valley are,

Jullalabad,	Huzanow,
Sooltanpoor,	Busowul,
Bala Bagh,	Lalpoora,
Char Bagh,	Gurdee,
Futtehabad,	Goshta,
Neemla,	Sun-i-Serai,
Gundummuk,	Kameh,
Kujja,	Shewah,
Heidah,	Killatuk,
Besh Boolay,	Shegee.
Butteekote,	

On the North of Nungnihar lie the countries of Noorgul, Kooner, Chughurserai, Bajore, Kaahgar, &c. ; on the West, Lughman and the Ghilzie country ; on the South, Bungish and Koorum ; and East lie the Khyber and Upper Momund country.

History.

1. As far back as A. D. 977, we find that Mingnihar was the scene of contention between Sabuctagi the Tartar, who assumed the title of Nasir-ood-deen, and Jaipal the Brahmin Prince. History mentions that their armies came in sight of each other on the confines of Lungán now called Lughman ; and the present village of Futteh-i-abad is said to mark the spot where a victory was gained by Subuctagi over the Hindoo Prince ; his subsequent defeat and imprisonment took place at Peshawar.

2. Sooltan Babur in his memoirs, thus mentions Nungnihar, in the year A. D. 1504 :—

“ Nungnihar,” he says, “ in many histories is written Nekerhar. The residence of the Darogha or Commandant of this district is Adinapur. Nungnihar lies on the East of Cabul, thirteen farsangs of very difficult road. In three or four places there are some very short *ketuls*, or steep hill Passes, and in two or three places there are narrows or straits. The Khiralchi and other robber Afghan tribes infest this road with their depredations ; there was no population along this road until I settled Kuratur below the Kurruksai, which rendered the road safe. The *gurmool* (or region of warm temperature,) is divided from the *serai* (or region of cold temperature,) only by the steep Pass of Badam Cheshmeh. Snow falls on the Cabul side of this Pass, but not on the Kurruksai and Lamghanat side ; the moment you descend this hill Pass you see quite another world. Its timber is different ; its grains are of another sort ; its animals of a different species, and the manners and customs of the inhabitants are of a different kind. Nungnihar has nine streams. Its rice and wheat are excellent ; oranges, citron, and pomegranates are very abundant, and of good quality. Opposite to the fort of Adinapoor to the south on a rising ground, I formed a Char Bagh (a great garden,) in the year 914, A. D. 1508. It is called Bagh Vafa (the garden of fidelity,) It overlooks the river which flows between the fort and the palace. In the year in which I defeated

Behar Khan, and conquered Lahore and Dibulpoor, I brought plain-tains and planted them there ; they grew and thrived. The year before I had also planted the sugar-cane in it, which throve remarkably well. It is on an elevated site, enjoys running water, and the climate in the winter season is temperate ; the garden is charmingly laid out. To the South lies Soofaid Koh, which separates Bungush from Nungnihar ; nine streams descend from the mountain, the snow on its summit never diminishes. On the skirts of the hill there are many airy and beautiful situations. On the south of the fort is Adinapoor. The tomb of the holy Lau, the father of Nuh, is in the Toomán of Aliabung. In some histories, the holy Lau is denominated Lamek and Lamekan. The people of the country have a general practice of changing the letter of Kaf into Ghain, and it seems very probable that the name Lamghan originated in that circumstance.

“ The Toomán of Nugnihar, Manderam Dereh Noor, Dereh Kooner, Noorgie and Cheghurserai I gave to Nasir Mirza.

“ I marched from Jumdool for the purpose of attacking Bajore. Having encamped near it, I sent a trusty man to require the Sooltan of Bajore and his people to submit and deliver up the fort. That stupid and ill-fated people refused to do as they were advised, and sent back an absurd answer. I therefore ordered the army to prepare their besieging implements, scaling ladders and engines for attacking fortresses. The preparations having been completed, it was luncheon time when the tower was breached, immediately on which the assailants drove the enemy before them and entered the tower. The men of the main body at the same time also mounted by their scaling ladders and entered the fort. By the favour and kindness of God, in the course of two or three hours, we took this strong castle (Naogee.) As the men of Bajore were rebels to the followers of Islam, and beside their rebellion and hostility, they followed the customs and usages of the infidels, while even the name of Islam was extirpated from among them, they were all put to the sword, and their wives and families made prisoners. I bestowed the country of Bajore on Khwojeh Kilan.

“ In the hill country all the inhabitants are Kafirs. In Kafirstan grapes and fruits are extremely abundant, and it produces a great quantity of wine, but in making they boil it. In the hills of this

district, they have the pine, the jilguzeh, the oak and the mastic tree in great abundance.

“ I embarked on a raft, and passing the strait of Daronta, landed higher up than Jehannumah ; we went to the Bagh-i-
A. D. 1520,
January 7th. Vafa, which is opposite Adinapoor ; Kiam Urdooshah, the Hakim of Nungnihar, met us as we landed from the raft.”

In the events of the year 1525, Babur writes on the 8th of Sefer. (Nov. 24th.) “ In halting at Gundummuk I had a severe defluxion,* but by the mercy of God it passed off without bad effects. On Saturday I halted at the Bagh-i-Vafa, where I was forced to wait nine days for Hoomaiun and the army that was with him ; the garden was in great glory, it is a charming place, the few days we staid there, we drank a great quantity of wine. On Sunday the 17th Hoomaiun arrived ; that evening we marched and halted at a new garden, which I laid out between Sooltanpoor and Khwajeh Rustam.

“ On Wednesday we marched thence, when I embarked on a raft, on which I proceeded down the river, drinking all the way till we reached Kosh Goombuz, where I landed and joined the camp.” Babur proceeded to Peshawur (Begram.)”

In the year 1570, Jullaloodeen Mahomed Akbar Badshah, when proceeding from Cabul to India, desired Shumshoodeen Khafee to build the towns of Jullalabad and Attock, and which were completed in two years. His son Selim, (Jehanghir,) was for some time acting governor of Jullalabad.

The historian Abdool Kadir Budwanee, in confirmation of the above, states ; “ On the banks of the Nila, Akbar Badshah desired the town of Jullalabad to be built : about three coss from the town is the Bagh-i-Sufa, commonly called Char-Bagh, formerly known as the Bagh-i-Vufa, made by Sooltan Babur, near which was Adinapoor, the place where the governor resided.” The same author says, that Nungnihar in former times was known by the name of the Joo-i-Shaee.

During Shah Jehan's reign, that monarch made some additions to the town. The following is an inscription on a marble slab taken from an old fort, and placed in the principal Musjid of the town,

* A complaint very prevalent in the summer of 1840, among the British troops at Kujja and Gundummuk.

shewing that the fort was built by Itimam Khan, in Shah Jehan's reign, A. D. 1638.

بحکم شاه جهان اہتمام خان چونہاد
 بروی ساحت دیرین بنای خیر مال
 زآسمان زمان تا اثر بود پیدا
 مباد خوبی این قلعه در شکنج زوال
 حساب سال بنایش ز عقل می جستم
 ندا رسید بگویشم بنای فرخ فال

سنہ ۱۰۵۴ *

In the year A. D. 1735, Nadir Shah sent Sooleeman Yeesawul, (stick-bearer,) from Cabul, at the head of a mission to Mahomed Shah of Delhi. On the fifth day Sooleeman and his party reached Jullalabad. Abaidoolah, the son of Meer Abas of Kooner, whose power extended over the whole of Nungnihar, desired Sooleeman to be slain, and he was killed with much cruelty. Nadir Shah on hearing of the treatment that Sooleeman had met with, immediately left Cabul with his army and marched to Gundummuk, via Chareekur, Nepal and Tugon, thence he sent on to Jullalabad, sirdars Jillayer and Vyaz with the vanguard. Abaidoolah evacuated Jullalabad and fled to Kooner; he was pursued by the sirdars, he fled to Swat, many of his followers were slain, and his sister and women made prisoners and brought to Nadir Shah.

The monarch with his main army went from Gundummuk (where

* The translation of the inscription is as follows:—

Under the orders of Shah Jahán, Ihtamam Khan laid, this (stone)

On the face of the field of antiquity as the foundation of prosperity and wealth.

As long as the signs of the Firmament shall remain extant

Let not the fairness of this Fort be doomed to suffer from the pressure of destruction.

I was searching within my mind the Era of this foundation.

A divine voice struck my ear, saying, *the foundation of good Omen.*

The numerical value of the letters composing the words, (*the foundation of good omen*,) بنای فرخ فال added up make the date of the building A. H. 1054, corresponding with A. D. 1638.—Eds.

he describes the water to be good, and the air delightful,) to Behar; thence to Jullalabad, where he remained only 31 days; his sirdars meanwhile having captured Kooner and Bajore, he proceeded via Chara to Peshawur, where Nasir Khan, the governor, submitted without making any defence.

To enumerate all the important events which have taken place in this district since that period would take up too much space. I will only briefly allude to a few of them.

On the 10th of Sept. 1801, Shooja-ool-Moolk marched from Peshawur to attack Cabul. At Heshkan he found Mahmood's force, consisting of three thousand men, drawn up, the Soorkhrood being in their front. Elphinstone thus describes the battle. "Shooja had at this time at least 10,000 men, but they were Burdooranees, and though accustomed to the battles of their clans, they were strangers to discipline and to regular warfare. Shooja's armies were at first victorious, but his Burdooranee troops eager to profit by the confusion, quitted their lines as soon as they thought the victory decided and began to plunder the royal treasures, which Shooja had imprudently brought into the field. Futteh Khan seized this opportunity and charging at the head of his Baurikzyes completed the confusion in Shooja's army. The battle was now decided, and Shooja escaped with some difficulty to the Khyber."

In the year A. D. 1809, June 29th, Shah Shooja sustained another defeat at Neemla when opposed to Mahmood Shah and his Minister Futteh Khan. Akram Khan, Shah Shooja's Prime Minister, was slain in this battle. Shah Shooja fled over the mountains South of the Khybur Pass to Hisaruk.

On Zuman Shah's defeat near Sireesp, he fled to the Jullalabad valley, and stopped at Mollah Ashik's fort, which is on the Chipreal rivulet, about 14 miles from the town of Jullalabad, near the Soofaid Koh; "the Moollah received them hospitably, but took means to prevent their escape, and sent off a messenger to Mahmood Shah. Shah Zuman during his confinement, secured the Koh-i-Noor with some other jewels in the wall of his apartment, which were afterwards found on Shooja's accession." (Elphinstone) The poor monarch was blinded on his road to Cabul, by piercing his eyes with a lancet.

On Shah Shooja being restored to his throne, the first step he took

was to release his brother Shah Zuman, and soon after Moollah Ashik who had betrayed him, was apprehended and suffered the punishment of his perfidy and ingratitude.

When the Baurikzye Khans gained the ascendancy over the Doo-ranee monarchs, Azeem Khan placed his nephew Nuwab Zuman Khan in the government of Nungnihar, and from the time of Azeem Khan's death 1823, until the year 1824, the Nuwab enjoyed the entire government collections of the province. Dost Mahomed insisted upon a portion of them being made over to him; this the Nuwab refused. The Ameer collected a force and marched against him, and on his approach the Nuwab withdrew his guns to Kameh, and there took up a position near Abdoor Ruman's Fort; negotiations took place between the contending parties, the Nuwab having made some slight sacrifice of his interests; Dost Mahomed returned to Cabool.

The Nuwab then commenced fortifying the town of Jullalabad, the old fortifications being nearly on a level with the ground; a great number of people were collected for the purpose; the work advanced rapidly, but ere a month had elapsed, the Ameer was again on his march to Jullalabad, and the fort was still incomplete; the Nuwab, however, determined to defend it. After three days resistance a mine was sprung, the town was taken by assault, and it was given up to plunder. The Nuwab was taken prisoner and displaced from power, and Sooltanpoor and the transit duties of Cabool were made over to him for his maintenance. Dost Mahomed's brother, Ameer Mahomed, remained a short time in charge of the province; he was succeeded by the Ameer's son Mahomed Afzool, who was recalled after a few months, and succeeded by his younger brother Akbar; he continued in charge until the arrival in 1839 of the British Troops. Meerza Aga Jan, a Kuzzilbash, was then on the part of the Shah appointed governor.

There are topes and extensive ruins to be found scattered over the valley, which if explored attentively by learned antiquarians would no doubt reward them for their labours.

There are now no perfect buildings of any size, beauty, or antiquity in the valley,

The royal gardens of Char Bagh, Baghwanee, Bala Bagh, Neemla, and Gundummuk, laid out by Sooltan Babur and Alee Murdan, and

renewed by Timoor Shah and Shah Zuman, during the Baurikzye rule were quite neglected.

The Gundummuk garden has been quite destroyed; the fine old plane trees were cut down by sirdar Mahomed Akbar's order, to build the fort of Futtung, at the confluence of the Soorkhrood and Gundummuk rivers. The fort would be found strong against Afghan troops without artillery.

There is a Zearut at Char Bagh, to which Moosulmans and Hindoos go to pray. The former suppose it to be the tomb of Shah Fyz-collah-Wullee, the cup-bearer of Mahomed the prophet; the Hindoos, on the other hand, imagine it to be the resting place of Hajee Ruttun, a fuqueer of great sanctity and note. There is also a large Hindoo temple in the town of Jullalabad, inhabited by a supposed descendant of Ruttun. Hindoos in great numbers come from Peshawur and other places to make him offerings, which are said to amount to the large sum of 40,000 rupees annually.

In the neighbourhood of Jullalabad, there is also Shah Murdan's Zearut, held sacred under the supposition that Allee, the son-in-law of Mahomed, rested there, and in the temple is exhibited a large black stone, shewing an impression of the hand of Allee. A garden is attached to the Zearut, where a fair is held every Thursday, to which crowds from the town and camp resort. Nazir Hussan, formerly in the service of Nuwab Zuman Khan, is now expending his money on the Zearut and garden. The Zearut was originally raised by Abdoola Khan Khafir, in the reign of Timoor Shah.

Of late years the following persons filled the office of governor of Jullalabad.

<i>Governors.</i>		<i>In whose reign.</i>
Abdool Khan Khafir,	.. ..	Timoor Shah.
Meer Dad Khan, (Isaukzye,)	.. ..	Ditto.
Ghunnee Khan,	.. ..	Ditto,
Gool Mahomed Khan, (Gurdeezye,)		Zuman Shah.
Causim Khan, (Moghul,)	.. ..	Ditto.
Baba Khan, (Afshar,)	.. ..	Ditto.
Meer Alee Khan,	.. ..	Ditto,
Gholam Alee,	.. ..	Ditto.
Shurreef Khan,	.. ..	Shah Shooja.

Ibrahim Khan, (Jumsheeree,)	..	Mahmood Shah.
Shehur Dil Khan, (Baurikzye,)	..	Mahomed Azeem Khan.
Shukoor Khan, (ditto,)	.. ..	Ditto.
Moghul Khan,	.. ..	Ditto.
Nuwab Zuman Khan,	.. ..	Ditto.
Ameer Mahomed Khan,	.. ..	Dost Mahomed.
Mahomed Afzool,	.. ..	Ditto.
Mahomed Akbar,	.. ..	Ditto.
Meer Aga Jan,	.. ..	Shah Shooja.

Routes from Jullalabad to Dukka.

No.	Names of stages.					Miles.
1.	Summer Kheil,	..	..	..	..	7
2.	Buttee Kote,	..	..	..	..	13½
3.	Huzarnow,	..	..	..	..	10
4.	Dukka,	..	..	..	..	9
						<hr/> 39½
2						
1.	Summer Kheil,	..	..	..	..	7
2.	Char Deh,	..	..	..	..	14
3.	Busawul,	..	..	..	..	8
4.	Dukka,	..	..	..	..	13
						<hr/> 42

From Jullalabad to Soorkhab.

1.	Futtihabad,	..	..	..	..	15
2.	Sufaidung,	..	..	..	..	13
3.	Soorkhab,	..	..	..	..	10
						<hr/> 38
2						
1.	Sooltanpoor,	..	..	..	..	8
2.	Futtihabad,	..	..	..	..	7
3.	Neemlah,	..	..	..	..	9
4.	Gundummuk,	..	..	..	..	6½
5.	Soorkhab,	..	..	..	..	7½
						<hr/> 38

Weights, Measures, &c.

The land revenue in kind is collected in Tabreez weight, and the money taxes in the nominal Tabreez (Khaan) rupee.

Tabreez Weight.

2½ Charuks,	1 Mun-i-Tabreez.
100 Mun-i-Tabreez, ...	1 Kharwa-i-Tabreez.
1 Kharwa-i-Tabreez, ..	10 Maunds Hindoostanee.
100 Kharwa-i-Tabreez, ..	1000 Maunds Hindoostanee.

Coin Table.

10 Shahees,	1 rupee Khawa.
20 Rupee Khawa,	1 Tooman Tabreez.
1 Tooman Tabreez, ..	Cos. Rs. 14-9-4.
100 Toomans-i-Tabreez, ..	Ditto, 1,458-5-4.
1000 Toomans-i-Tabreez, ..	Ditto, 14,583-5-4.

An account of a remarkable Aerolite, which fell at the village of Manicgaon, near Eidulabad in Khandeesh. Communicated, with a specimen, to the Asiatic Society, by CAPTAIN JAMES ABBOTT, B.A. late Resident Nimaur.

A Chemical Examination of the above Aerolite, and Remarks, by HENRY PIDDINGTON, Curator Geological and Mineralogical Department of the Museum of Economic Geology.

At the Meeting of October, 1844, Captain Abbott communicated to the Society the following documents, with two small specimens of the Aerolite.

CAPTAIN J. ABBOTT, *Artillery Dum Dum, to the Secretary Asiatic Society, Calcutta,*

Dum Dum, Sept. 16th, 1844.

Sir,—In July 1843, I received at Mundlaisir, from the Komarder (or Native Collector) at Asseer, a report of the fall, in that part of the country, of a meteoric stone, together with a few grains, said to be particles of the same. I immediately dispatched a Karkoon to the spot, to ascertain the truth or falsity of the statement, and to collect

specimens of the supposed Aerolite. These accompany my letter. They differ so much from the structure of every reputed Aerolite I have previously met with, that I should be inclined to doubt the veracity of the reporters, could I discover any other reason for questioning it. I have never heard any other instance of an Aerolite in that neighbourhood. The fact is implicitly credited in the neighbourhood of Eidulabad, where it is said to have occurred. These specimens appear to me to resemble masses of friable rock of the quartz family, which I have met with in Malwa. But it is evident that a mass of texture so loose could never have borne unshattered, the propelling agency of fire, nor has any volcano existed within the memory of man in Nimaaur or Mahiswah, nor I believe in Khaundes, although fable declares Oojyne to have been buried beneath a shower of mud, and Mahiswah to have been destroyed by the mischievous malice of a demon. The depositions of the observers I have translated and appended. The spot was beyond my district, or I would myself have visited it. It is probable that the collector of Khaundes may have reported it to the Bombay Society.

This report, and the note upon granite in the Nurbudda, were prepared many months ago, but restricted leisure, and many concurring events, prevented their being forwarded.

J. ABBOTT, *Capt. Arty.*

Fall of a Meteoric Stone in Khaundes.

Deposition taken by a Karkoon, despatched from Asseer by Capt. James Abbott, to collect information upon the subject.

Oonkar, Puttail, and Ghubbahjee, Chowdry, of village Maniegaon, purgunnah Eidulàbàd, Tuppeh Sowdah, Illaquh Dhooliah in Khaundes, depose as follows.

Taken July 26th 1844.

On Mittee Asarr, Soodie Teej, Goraur ké dín.

We were in our house. At 3½ o'clock P. M., whether from heaven or elsewhere, a prodigious ball (ghybee golah) fell. The noise it made was very great, it might be heard twenty miles round. We heard it with our own ears, and in fear and trembling ran outside to look, so running out, we found that it had fallen outside the village

on the Southern aspect, and that in falling it had been shattered to pieces, some of which had been scattered far. We put our hands upon that which lay together, it felt cool; shortly after it became rather warm. When first we saw it, the pieces were black; after a day's interval the color changed to blue, and now the fragments are white.

Question. When the ball fell, was any flash perceptible, or was the heaven darkened? Who saw it fall? How large was it? And who heard the noise at the distance of 20 miles?

Answer. We saw nothing. When the ball fell, we heard the noise, and ran to see what had caused it. The spot on which it fell was hollowed by the shock, a span and half in diameter and three fingers breadth in depth. The ball was about the size of a kedgeriee pot (ghurrah, i. e. about ten inches in diameter); the people of Eedallabad and of other parts heard the noise in the clouds, at least so they say. The ball being shattered, people came and carried away the pieces. The remainder was sent to the Sowdah Komardar, and by him to Dhooliah. What remains I give you.

True and literal translation.

J. ABBOTT, *Capt.*

Mundlairsir, August, 1843.

Pol. Asst. in Nimaur.

Note.—A few grains of this Aerolite were first sent me by letter from Asseer. I despatched a Karkoon immediately to the spot to make enquiries, and collect as much of the fragments as possible, supposing that he should have cause to believe the report well founded. The greater part of what he collected accompanies this report. It agrees exactly with the grains first sent me. J. ABBOTT.

At Captain Abbott's suggestion, the Collector of Khandeish, J. Bell, Esq. Bomb. C. S. was written to, and he has kindly forwarded us a few small fragments more, with the following letter and deposition.

To W. W. BELL, Esq. Collector of Khandeish.

SIR,—With reference to your Mahratta Yad of the 5th ultimo, with enclosure from the Secretary to the Asiatic Society of Bengal, requesting me to transmit any information along with specimens procurable of an Aerolite that fell in the month of July, 1843, in the vicinity

of the village of Manegaum of this talooka, I have the honor to transmit translation of a deposition given before me, by a couple of individuals who were spectators of the fall of the Aerolite in question, along with five small specimens of the same, all that I have been able to procure after much search ; these however I trust will be sufficient to indicate the nature of the Meteorolite.

I beg to return your enclosure, and to remain, Sir,

Your most obedient servant,

*Camp, Circuit at Rawere, C. INVERARITY, Actg. 1st Assist. Col.
Talooka Jaoda, January 1st, 1845*

Translation of a deposition given in Mahratta, by Goba Wullud Nagojee Chowdrie, and Hunmunta ud Dama Naik Solie, inhabitants of the village of Manegaum, Pergunnah Edulabad, turaf Jaoda, of the Khandesh Collectorate, who were spectators of the fall of an Aerolite in the vicinity of their village, in the month of July 1843.

On the day the Aerolite fell we were both seated, about 3 o'clock of the afternoon, on the outskirts of the village, in a shed belonging to Ranoo Patel. There was at the time no rain, but heavy clouds towards the Northward ; there had been several claps of thunder for about two hours previously, and some lightning. Suddenly, while we were seated in the shed, several heavy claps of thunder occurred in quick succession, accompanied with lightning, on which we both went out to look around us, when in the middle of a heavy clap, we saw a stone fall to the ground in a slanting direction from North to South, preceded by a flash of lightning. It fell about fifty paces distant from us ; on going up to it we found that it had indented itself some four or five inches in the ground ; it was broken in pieces, and as far as we could judge, appeared to be about fifteen inches long and five in diameter, of an oblong shape, somewhat similar to the *chouthe* grain measure ; it was of a black vitreous colour outside, and of a greyish yellow inside ; it was then of a mouldy* texture, and hardened to the consistence of the present specimens afterwards. Only one stone fell. No rain had fallen for eight days previously, nor did it, until four days after the fall of the stone. It had been warm all day before, but

* So in MSS. Perhaps muddy, i. e. soft, earthy texture was meant ?—H. P.

not much more so than usual. From midday until the time the stone fell, (3 P. M.) it was very cloudy towards the northward ; after its fall, the thunder ceased, and the clouds cleared away. No stone of a similar description had ever fallen near our village before. The pieces of the stone were immediately after carried off by the country people. Our village is situated on the banks of the small river the Poorna ; there are no hills in its vicinity, the nearest being three coss (or 6 miles) off. The above is a true statement, dated at Rawere, talooka Jaoda, on the 17th December, 1844.

(Signed.)

Goba ud Nagojee Chowdrie.

„

Hunmunta ud Dama Naik.

True translation of the deposition given before me on the above date,
C. J. INVERARITY, *Actg. 1st Assist. Col.*

CHEMICAL EXAMINATION.

The specimens were referred to me for examination, of which this is my report.

The specimens are mainly composed of an earthy greyish white, pulverulent mass, slightly tinged with a bluish grey in some parts. It is excessively friable, and both crumbles and soils the fingers even when most delicately handled. In the earthy mass are thickly imbedded light, greenish, glassy particles of olivine, single and in nests, resembling green mica or felspar ; the appearance in some parts being almost that of an earthy variety of Lepidolite. On the side of one piece of Captain Abbott's specimens, is a bright black crust, thickly but minutely mammillated. When this is touched with the file it leaves a rusty mark, but gives no metallic trace. This crust is exceedingly thin, and splinters off, and in one place a mass of the olivine in it is melted to a green bead. It is too fragile, and our specimens too small, to attempt obtaining sparks from it. Two of Mr. Bell's fragments also have small portions of crusts yet adhering to them.

Internally and by the magnifier, a few bright white metallic points are discoverable, and in one or two places small nests of it ; there are also a few of a brown kind. We have one fragment of an Aerolite which fell in 1808, at Moradabad, which is pulverulent, but not so much so as the present specimen by a great deal. The present specimen is in this respect almost unique, as the only one I now recollect to have

read of as very pulverulent, is the one from Benares, mentioned in the Philosophical Transactions.

The Aerolite of Moradabad is studded over with rusty specks from the oxidation of the iron. All our other Aerolites are of a compact texture. I may note here, that we now possess in our collection, 10 specimens, comprising six varieties of Aerolites, and four of Meteoric Iron from Siberia, Brazil and India. One of the Society's Aerolites is also well entitled to be called Meteoric Iron, as it consists mainly of that metal, (and no doubt Nickel) rather than an Aerolite, by which we usually designate the more earthy looking stones.

The magnetism of the Kandes Aerolite is no where apparent except at the patch of pyrites (Magnetic Pyrites?) on the piece which has the crust, but here it is strong and distinct.

From its extreme friability I have not ventured to take its specific gravity, which is about 4 or 4.5, I judge, for it might crumble to pieces in the water, and is too rough and tender to admit of varnishing. Specific gravity however is an indication of no value in these heterogeneous compounds.

The green crystals, when examined separately, affect a somewhat rhomboidal or cubical form, but none are clearly defined. Their color is a bright, clear, and very light grass-green.

List of Meteorolites in the Collection of the Asiatic Society, 1st January, 1845.

1. Fell at Moradabad 1808, Captain Herring. One piece of this is rather friable. 3 pieces.
2. Dr. Tytler's Aerolite at Allahabad, 3 large pieces.
3. Aerolite fell about 40 miles to the West of Umbala, between the Jumna and Punja, 1822-3. Obtained by Captain Murray; given by Mr. J. Bird to Mr. Cracroft.
4. Fell at Bitour and Shapoor, 75 miles N.W. of Allahabad, 30th November 1822.
5. Fell at Mow Ghazeepore, February 1827, R. Barlow.
6. Fell at Manegaon in Kandeish, July 1843, Captain J. Abbott, B. A. and J. Bell, Esq. Bombay C. S. Collector of Khandeish.

Meteoric Iron, or stones having a large proportion of it.

1. Meteoric stone containing Iron and Nickel, fell at Panganoor in 1811. Mr. Ross of Cuddahpah.
2. Meteoric iron, Siberia, Pallas.
3. Ditto ditto Sergipe Brazil, Mornay and Wollaston.
4. Lightning stone of Nepal, not examined, but may be Meteoric.

BLOWPIPE EXAMINATION.

The grass-green crystals above described: Per se infusible, but take a rusty brown appearance, as of semi-fusion or oxidation, on the exterior, remaining still translucent. *On Platina Wire*, with borax and phosphate of soda, fuses at first in part only (a lump remaining), giving a light clear olive glass; adding more of the flux it finally dissolves with various shades of olive and grass-green according to the proportions of assay and flux. A minute crystal in Mur: acid does not soften, gelatinise, or colour it by several days digestion. These are doubtless Meteoric olivine.

The white friable part, taken as free as possible from the grey specks and entirely so from the green crystals. *In the forceps* slightly oxidates to a rusty appearance at the outer part, but does not fuse.

On Platina wire and with Soda. Fuses to a dirty olive coloured bead, which in the reducing flame gives metallic iron with some earthy residuum. With Nitrate of Cobalt only a dull rusty colour. Hence the absence of Alumina, except perhaps in very minute proportion.

The metallic looking vein was assayed in various manners for Nickel, but no trace of it could be elicited, the vein being apparently pure pyrites. Nickel may nevertheless exist, though in small proportions, and we cannot venture on consuming more of these precious fragments, since the fused crust, the olivine, and the white matrix are chemical evidence enough of meteoric origin of the stone.

The whole of the dust which had collected in the paper, being carefully collected, was assayed both by the blowpipe and *via Humida* for Chromium, but no traces were detected. As said of Nickel however above, so also of this substance: it may exist in minute proportion, though not detectable in such extremely small assays.

A few Notes on the subject of the Kumaon and Rohilcund Turæe

By J. H. BATTEN, Esq., Civil Service.

Previous to the reign of the Emperor Akbar, that is, to the latter half of the 16th century, the history of Kumaon concerning the Turæe. Deficiency of records in connection with its lowland possessions, and also, of the Hill Raj of that name itself, is but imperfectly known.

Even to a still later period, tradition, confirmed by documentary evidence and the voice of general testimony in the neighbouring districts, takes the place, within the province itself, of all authentic written records on which reliance can be placed. The few Puthan families of respectability now settled in the Turæe are, like their whole race in Rohilcund, but a recently introduced colony. From them, therefore, it would be vain to look for any details connecting the series of events even in their own villages. The *Bhoksa* and *Tharoo* tribes, although permanent occupants in the whole jungle tract lying along the base of the Sub-Himalayan mountains between the Ganges and the Gunduck, are not, and never have been, permanent residents at any one spot; nor are they possessed of sufficient intelligence to know the tale of their own chosen region, or be able to recount the revolutions which have occurred on the scene of their migrations. Of the other tribes inhabiting the present villages or clearings in the Turæe, it is not probable that many families can trace their settlement in that dismal wilderness, beyond the third, or utmost fourth generation preceding them. Rajah Sheo Raj Sing, the principal personage of the Turæe pergunnahs, does not owe his present position in that tract of talooqdar, or manager, or farmer, or zemindar, (or whatever, under existing arrangements may be his proper designation,) to any direct descent from the Kumaon Rajahs, or to any long possession continued from their time to his own. Before his grandfather Lall Sing, accompanied by Mahundra Chund the representative, at least by immediate birthright, of the royal race of Kumaon, descended with their families to the plains, and became, by favour of the Nuwab Wuzeer, connected to the latter history of the Turæe, intestine disturbances had begun to destroy the semblance even of a

central government in Kumaon, and the state records, such as they were, became scattered among the various *kamdars*, to whom they had been officially entrusted; and who only preserved such portions of them as might tend to prove their own importance, or that of their several families. During the troubles consequent on the Ghoorka invasion in the year 1790 A.D., the regular traces of past times became more and more obliterated; and when the last relies of the *Chund* Rajahs abandoned their native hills, and took refuge at *Kilpoory* in the plains, nearly the only place where they still possessed any thing like a property in the land, they took down with them no weighty burden of state records, and left but few behind. Afterwards at Roodurpoor, one chief scene of their exile, a fire occurred, which is stated to have consumed many family documents; while at Almora any *dufter* or record office that existed, may be supposed to have commenced its collections only from the accession of the Ghoorkhalee Government. Under these circumstances, it is not a matter of wonder, that neither the British authorities in the hills, deriving their information from *kaneongoes*, and other usual depositaries of such knowledge, nor, the descendants of the Hill Rajahs in the persons of Sheo Raj Sing above named, or his cousin of the elder branch Pertaub Sing, now residing at Almora as pensioner of the English Government, should be able to furnish *exact* data, for an historic narrative.

2. Using such means as I have in my power, I proceed to draw a short and rough sketch of the successive revolutions to which the country has been subjected, and, whenever possible, of its successive conditions, in the hope, that such a description, however imperfect, may be found if not useful as evidence, at least acceptable as part of a picture, at a time when the attention of those in authority has been strongly drawn to the *present* state of the traet described.

3. The dynasty called *Kuttoora* is the earliest known to have reigned in Kumaon. The Rajahs of its line are said to have been of the *Seoruj-Bunsee* origin, and they have been clothed by the imagination of the *paharees* with almost divine attributes, while the extension of their authority to Delhie and Kanouj in the plains, and from Mundee to Siccim in the hills, is con-

Turace during the Kumaon Raj, Kuttoora Dynasty, Chund Dynasty, &c. &c.

Kuttoora Dynasty.

fidently assumed as a matter of fact. The whole race* appear to have become utterly extinct, but, at what time and in what manner, no one can tell, and in fact their whole history is lost in the greatest obscurity. Within the present provinces of Kumaon and Ghurwal, *Josheemuth* near Budrinath, and *Kuttoor* not far to the North of Almorah in the now almost desolate valley of Byjnat, are celebrated as the principal seats of their power. The ruins still existing in the latter place, and at *Dwara Hath*, some miles to the westward, are pointed out as relics of the Kuttoor Raj, as are also the low carved stone pillars called *Brih-Kumbh*,† placed at intervals of a few miles, so frequent in the eastern parts of the district, and which are said to have marked the halts or encampments in the royal progresses. Some of these ruins, especially the *chubootras* and wells, are not without beauty, at least in their carving, and the great number of small temples even now standing, each as it were dedicated to a separate idol, and the quantity of idol images themselves, which have been found in their precincts, shew that the Kuttoora Rajas were devout worshippers of the whole Hindoo Pantheon. The shape of the buildings, and the character of the sculptures, are said to be similar to the architectural features observed in the South of India, but, I believe, that the same forms are quite common in Bundelcund and on the banks of the Nurbudda. From the account above given, it will at once be seen, that the dynasty of which we are speaking, was of lowland origin, and that no signs of an aboriginal extraction are visible in its remains. As, before the Mahomedan conquest of India, the rulers of a region so illustrious in the *Shastras* as the *Himalaya* mountains, being also by their position masters of the sacred rites at the various sources of the Ganges, may be supposed to have held rank equal with, if not superior to, the Rajahs of *Kuttair*, or country between the mountains and the Ganges now called Rohilcund; and, as after the establishment of the Mahomedan empire in Hindostan, the Kumaon Rajahs were found in hereditary possession of the Turæe by a tenure quite independent of any grant from lowland potentates, I see no reason

* At least that tribe of the Kuthoora *Suruj-bunsees* which reigned in Kumaon.

† This is *Bhákha* for *Brihstumbh*. बृहस्तम्ब

for doubting that the Turae throughout its whole extent formed an integral part of the Kuthoor Kumaon Raj. That it also formed an *important* part, may be assumed from the almost absolute necessity still existing, that a large portion of plain country should, if not attached to the hills, at least be available for the annual resort of the *Paharees* and their cattle; (an occupancy which under native rulers could hardly be maintained without an actual right of property in the soil, and actual separate possession thereof by the hill powers;) and from analogies drawn from the late and existing feeling in *Nepal* in regard to the tract at its base. Beyond this, all is conjecture regarding those ancient times; and the question whether *Sumbhal* and *Bareilly* were then subject to Kuthoor, may be left for discussion between the *Paharees* and the *Desees*, when they meet annually at their now common pasture grounds, and need not engage the too jealous attention (as at one time it was feared it might,) of British functionaries.

4. The Kuttooras in Kumaon were, we are told, succeeded for Khussia Raj. some time (13 or 14 generations) by a *Khussia Raj*, that is, by numerous petty chiefs among the mountaineers themselves, each governing his own small territory, and fighting with his neighbours. The many small forts scattered throughout the province, in situations where such defences would be useless to a Government holding undivided authority over the whole tract, would seem to prove the truth of this traditional history.

5. On emerging at last, from this confusion, we find the earliest Chund Dynasty, name of the *Chund* dynasty in *Som Chund*, a *Chundrabunsee Rajpoot*, who is narrated to have come from the village of *Joosee* in the province of *Allahabad*, (Trans-Doab,) and to have established his power and a capital at *Chumpawut*,* at or about the year 1100 Saka, corresponding to 1235 Sumbut, and 1178 A.D. The *Joshee* (Jyotishee) Brahmins who have subsequently been such influential members of the hill community, accompanied the first of the Chunds to Kumaon. It would be quite out of place to register in this report, the list of Rajahs who followed *Som Chund*. Some per-

* Also called *Kalee Kumaon*, from its vicinity to the *Kalee* river.

sons, indeed, are found who deny the continuity of the dynasty altogether;* but, be that as it may, the historian of the *Turree* has almost nothing to tell concerning any of the line previous to the 44th generation. *Roodur Chund*, son and successor of Rajah *Kullean Chund*, (who removed the capital from Chumpawut to Almorah, and built that city in 1620 St. or 1563 A.D.,) was a contemporary of the Emperor Akbar, and, in the course of his reign of 28 years, made frequent visitations to the *Turree*, and, not to leave himself without record in the land, became the founder of *Roodurpoor*.

6. But, what is meant by the *Turree* in Akbar's time? To what

Roodur Chund—Extent of lowland dominion did *Roodur Chund* of Kumaon *Turree* in his time. succeed? Although an hereditary, was the

Turree an undisturbed possession of Kumaon in preceding times? On a reference to co-temporaneous history, we find that the year 1194 A. D., is the date generally fixed for the conquest of *Kanouj* by the arms of *Kutb-ud-Deen*, the Lieutenant of *Shahab-ud-Deen*, and, also, that 1195 A.D., saw him extend his victories across the Ganges to *Budayoon*. It is, I think, extremely probable, that an incorrect tradition may have anticipated the commencement of the *Chund* dynasty in Kumaon by sixteen years; and that, in the great revolution which transferred the empire of the Gangetic plain as far as *Benares* from the *Rahtores* to their Mahomedan victors, when the dispersion of numerous powerful Hindoo tribes took place everywhere, among them the earliest *Chund* and his followers found their way to Kumaon. But, whether the elevation of this race in the hills preceded or followed the fall of the *Kanouj* kingdom, the shock of that fall may well be supposed to have reached to the foot of the *Himalya*, and hardly to have been arrested at *Budayoon*, and the lower parts of *Kuttair*. The rule of the hill powers, whether *Khussia* or *Chund*, if it had survived at all the decadence of the

* It seems a matter of universal tradition that between the 8th and 9th succession of *Chunds*, a second *Khussia* Raj intervened; and also, that until the 11th of the line, by name *Lutchmee Chund*, some representatives of the old *Kuttoora* dynasty possessed a limited power at *Kuttoor* itself; but that in the reign of this Rajah, they were subdued by violence, or absorbed among the mass, or otherwise disappeared, and "the land knew them no more."

Kuttoora line, and the breaking up of that *Raj* into petty chiefships, must have been rudely shaken at this period. Even allowing, that subsequently, some kind of authority over this tract was regained, as the *Chund Rajahs* became, one after the other, more and more firmly seated on their mountain throne, the authority must have been one exercised under permission on account of tribute yielded to others, or, at best, under neglect or contempt on account of its intrinsic insignificance.

The *Puharrees*, indeed, while boasting of their ancient boundary on the south as *Gunga-wár*, or, not short of the Ganges, almost unanimously allow, that at one time, the possessions of their ancestors in the plains were woefully circumscribed, if not altogether lost; and that it was not without difficulty that *Udhian Chund*, the 30th of his line, attained by some means or other an honorable and determinate position in the *Des* for himself and successors. To continue, then, the story, and answer the remaining questions placed at the head of this paragraph, *Roodur Chund* found himself the lord of the *Muhals* or *Pergunnahs* named below:—

1.	<i>Suhujgeer</i> ,	now called	<i>Juspoor</i> .
2.	<i>Casheepoor</i> or <i>Kotah</i>,	.....	<i>Casheepoor</i> .
3.	<i>Moondia</i>,	.....	<i>Bazpoor</i> .
4.	<i>Guddurpoora</i>,	.....	<i>Guddurpoor</i> .
5. }	<i>Boksar</i>,	.....	{ <i>Roodurpoor</i> .
6. }			{ <i>Kilpoory</i> .
7.	<i>Bukshee</i>,	.....	<i>Nanukmutta</i> .
8. }	<i>Chinkee</i>,	.....	{ <i>Bilheree</i> .
9. }			{ <i>Surbna</i> .

This whole tract, which is exclusive of the Upper *Bhabur* nearer the hills, (of which I shall have to speak hereafter,) was called *Choura-see Mal*, and *Noulukhia Mal*, 'mal' being, then as now, the hill term for the low country. The former name was derived from the size of the territory, which was reckoned at 84 coss in length,—the latter name from the real or nominal revenue of the territory; viz., nine *lacs*. The boundaries on the west were the *Peera* or *Peela Nuddee* at *Raipoor*

between *Juspoor* and the *Ramgunga*; on the north the *Ookhur Bhoomee*, or, region of no water,—(now the *bun* or forest;) on the south the higher ground of the regular plains according to certain old known limits of the *Pergunnahs*; and on the east the *Surjoo* or *Sardah* river near *Poorunpoor*. The reign of *Roodur Chund* was not entirely without troubles, for during *Akbar's* minority, the Imperial officers attempted to resume the territory, and sent a force for that purpose. The young *Rajah*, however, made a successful resistance, and afterwards proceeded to *Delhi*, where he obtained favor at the Court of the Emperor, and distinguished himself in some expedition against *Nagor*. The final result of this step was his obtaining a *sunnud*,* for the *Chowrasee Mâl†* *Pergunnahs*, and his return to the hills with enhanced power.

7. In the time of his immediate successor, *Lutchmee Chund*, (still in the reign of *Akbar*,) the royal armies appear to have revisited the *Turæe*, and their places of encampment are still pointed out at *Tandah*, and more especially at *Peepulhutta*, where there is a mango grove called the *Badshahee Bagh*. Fourth in descent from *Roodur Chund*, we find *Tremul Chund*, *Rajah* of *Kumaon*, between the years 1625 and 1638 A.D. During part of this period, the *Turæe* is stated to have attained a high degree of prosperity, and to have actually yielded nine laks of rupees from various sources of revenue to the hill treasury; but, before the death of *Tremul Chund*, the prosperity of the tract excited the envy of its neighbours, and encroachments began to be made by the *Kuttair* *Hindoos*, not disallowed by their *Mogul* rulers. His successor, *Baz Bahadoor Chund*, finding himself in danger of total dispossession from these fertile lowlands, repaired to *Delhi*, and imitating the conduct of his ancestor, entered into the military service of the Emperor, *Shah Jehan*. He accompanied the Imperial expedition against *Candahar* and *Cabul*. A fortunate opportunity occurred, and the division which the *Rajah* commanded was able to gain some important advantage. Consequently, on the return of the royal armies

* Not now existent at *Almorah*.

† Some persons incorrectly consider this word as an abbreviation of the Persian word *Muhal*.

to Delhi, *Baz Bahadoor Chund* was honored by many signal marks of favor, but not content with obtaining empty titles, he adhered to the original object of his visit, and procured the full recognition of his right to the *Chourasee Mal*, together with an order, addressed to the Viceroy of the *Sooba*, for effectual assistance against the *Kattair* chiefs. Through the aid of *Nuwab Roostum Khan*,* he succeeded in expelling his enemies from the *Turaee*, and he afterwards caused the town of *Bazpoor* to be built, and to bear his name. It is said that "every *beegah* and *biswansee*" was cultivated at this time, and that the construction and repairs of bridges, *bunds* and water-courses was diligently cared for by the officers of government. These functionaries resided at *Roodurpoor* in the plains, and at *Barokherce* and *Kotah* on the spurs of the lowest range during the hot months. *Casheepoor* was not then a place of any importance, and the *Puharrees*, (I know not how correctly,) even place the foundation of the present town and gardens at a period more recent than the *Rajas* hitherto named. At *Kotah* and *Barokherce* and elsewhere in the lower hills are remains of forts and residences, and mango groves, which go far to shew, that the climate at those sites was not in former times so insalubrious as at present, when few men in power would confine their retreat from the *Turaee* heats to such low elevations in the mountains as these. *Kotah*, indeed, is stated to have been the capital for all the western portion of the *Chourasee Mal*, and to have given its name to the lower *Per-gunnahs*, and not only, as now, to the near submontane region. The good fortune of *Baz Bahadoor Chund* followed him to the end. He wrested the dominion of the *Bhote* passes from his Northern *Tartar* neighbours;—he associated his name with universal prosperity in the minds of his *Kumaonee* subjects;—and he died, after a rule of forty years, in the year 1678 A.D., during the reign of *Aurungzebe*.

8. If I were writing a connected history of Kumaon, the five successions of *Rajahs* between *Baz Bahadoor Chund* and *Kullean Chund*, would afford me ample material, both for narrative and comment: for during this period the prosperity of our hill principality having attained its culminating

History continued to the time of the *Rohillas*.

* The founder of Moradabad.

point,* began rapidly to decline, and the descent to ruin was marked by civil war with its disastrous accompaniments of royal assassinations and popular anarchy—a fitting prelude to the foreign invasions which followed in due course. But the important epochs in the history of the Kumaon Turæe need alone occupy our present attention, and passing over the half-century to which I have alluded, I arrive in the year 1653 Saka, or 1731 A.D., at the accession of *Rajah Kullian Chund*. The Rohilla chief, *Ali Mahommed*, at or soon after this period, succeeded his converter and adopter *Daood Khan* in the powerful position acquired by the latter;—the splendours of *Budayoon*, the old capital of the *Sircar*, had begun to pale before the display of upstart military importance at *Aonla*;—and in short, *Kuttair* was fast becoming *Rohilcund*.† In the earlier part of his rule, *Kullean Chund* had to contend against the aggressions of *Nuwab Munsoor Ali Khan*,‡ who attempted to attach *Surbna* and *Bilheree* to the neighbouring (Trans-Sardah) *Chuckladarship* in *Oudh*;§ but, by a successful appeal to the Emperor *Mahommed Shah*, the nominal integrity of his Turæe possessions was preserved to the Kumaon Rajah. During his latter years he suffered from a far more terrible enemy; but let me here snatch from oblivion an important record of the times immediately preceding the invasion of Kumaon by the Rohillas, which has fortunately survived the ruin of that sera.

* *Oodeetchund*, the immediate successor of *Baz Bahadoor Chund* and *Juggut Chund*, the third in descent, bear a high name in *Pahurree* history. In the time of the latter, nine lacs are again mentioned as the revenue of the Turæe; but after this epoch, the intestine disturbances became utterly destructive of all prosperity, both in Highlands and Lowlands.

† वैसीसै चैसो करी ॥ देषो प्रभुके ठाट ॥

आंबखे को राजाभयो ॥ बांको लीको जाट ॥

Waise se aise kuree dekho Prubhooka tat!

Aonle ko Raja bhayo—Bákolae ko Jat.

This popular distich concerning the sudden rise of *Ali Mahommed* is well known in Kumaon.

‡ Afterwards called *Syfter Jung*.

§ *Seebdeo Joshee*, the Prime Minister of *Kullean Chund*, was wounded in a fight with the *Chuckladar Tejoo Gor*, and was taken prisoner, but subsequently released.

Table of Revenue Statistics in the Munes (Mudh des) Pergunnahs of Kumaon for the year 1666 Saka, corresponding to 1801 Sumbut, and 1744 A.D. furnished by Kishnanund Udkaree, descendant of the former Tehseeldars of the Turae, and now inhabitant of Mouza Ruigul, Putee Uttagoolee Pergunnah Baramundul, Zilla Kumaon.

Name of Pergunnah.	Rubbee Har. vest.	Khureef Har. vest.	Khureh Purbee. (Holidays.)	Rachha (Juneo, &c.)	Saer (Miscellaneous.)	(Gaming tax) (Joake bach.)	Teeka. (Nuzurana.)	(Fruit tax &c.) (Khirchee Mewa- jat.)	Total annual Summa.
	Rupees.	Rupees.	Rupees.	Rs.	Rupees.	Rupees.	Rs.	Rupees.	Rupees.
Kasheepore, &c.	1,00,000	1,00,000	5,500	474	20,000	713	501	1,001	2,28,189
Roodurpore B'ilhary &c.	50,000	60,000	2,750	303	10,000	352	251	7,000	1,24,356
Surbna,	25,000	20,000	1,675	208	25,000	172	150	500	72,706
Total,....	1,75,000	1,80,000	9,925	985	55,000	1,257	902	2,201	4,25,251

A few Notes on the subject of

Note.—The Tuhaseeldar of Casheepore and the Chourasee Mal in general at the time of this statement was Permanund Udkaree. His grandfather Casheemath, in the time of Bas Bahadoor Chund, is said to be the real founder of the present Casheepore, on the site of 4 villages, in which the temple of Oyeinees Debes was a place of old Hindoo pilgrimages. The son of Casheemath was called Seemath, and the village, of Seemathpore, and numerous mango groves near Casheepore and Kotah planted by him, still render his name immortal as the thriving and fortunate servant of Choteechund. His descendant Krishna Nund Udkaree possesses numerous *sunnads*, both on copperplate and paper, of that period.

All the reports made by the Kumaon *canongoes* and other natives belonging to the province, concur in fixing the nominal revenue of the *Chourasee Mal Pergunnahs* in the year 1744 A.D. (or one hundred years ago) at about the same sum as that named in the preceding statement; viz. somewhat more than 4 lacs of rupees, inclusive of all items. But, at the time of the Robilla irruption in that year, the actual collections had dwindled to less than two lacs,* and as the whole lowland country, of which we are speaking, was virtually held in military assignment by the mercenary troops of the Rajah, known (from the place of their origin in the west) as *Nuggurkotia Sepahees*, it may be doubted whether in the time of *Kullean Chund*, at least previous to the expulsion of the *Rohillas* from *Kumaon*, any treasure ever ascended to Almorah at all. The present *Peshkar* of the *Huzoor Tuhseel*, *Kishna Nund Joshee of Gullee*, has found among his ancestral papers a long list of villages, and of their respective *rugbas*, the abstract of which I give below. It refers to an early year of *Kullean Chund*, 1657 Saka, or 1735 A.D.; but it unfortunately does not contain any information as to the proportion of waste to cultivated land.† It may, however, be found interesting, as shewing the number of villages standing on the rent roll at that time, and as affording data for comparison with the state of affairs in 1835 A.D., a date which (I know not how correctly,) I have heard mentioned, as that in which under British rule, Terrai matters were at their worst, and from which a renaissance order of things may be assumed to have commenced.

<i>Pergunnahs.</i>	<i>No. of Villages.</i>	<i>Total Beegahs.</i>
Boksar, (Roodurpoor, Kilpoory,) ...	247	7,90,950
Bukshee, (Nanukmutta,) ..	139	8,83,300
Chinkee, (Surbna-Bilheree,) ...	121	3,15,400
Casheepoor,	139	4,86,800
Suhujgeer, (Juspoor,) ...	59	1,58,400
Moondia, (Bazpoor,) ...	81	2,38,500
Guddurpoora,	83	3,31,200
Grand Total		27,04,550

* Only 40,000 rupees are mentioned in some of the records, but it is doubtful whether these referred to the whole or a part of the Turraee.

† *Kishna Nund Udkaree* also possesses very old lists of Terrai villages and their *beegahs*; but no account of cultivation or of ploughs. All these lists can be copied out *moutahwar* if necessary, either in Hindee or Persian characters, and forwarded to H. H. the Lieut. Governor.

In the years 1666-7 Saka, 1744-8 A.D., the Rohillas twice invaded Kumaon, under their two leaders *Najeeb Khan* and *Peinda Khan*. Though their stay was short,* its ill results to the province are well and bitterly remembered, and its mischievous, though religiously zealous character is still attested by the noseless idols and trunkless elephants of some of the Kumaon temples. The first irruption was only arrested in the very heart of the hills at *Ghyr-Mandee*,† near the sources of the *Ramgunga*. Here the *Rajah of Ghurwal*, *Pratap Sah*, checked the further progress of the Rohillas, and turned them back by a bribe of three lacs of rupees to their leaders; and, thus, the holy land, which owned his Kumaon neighbour and himself as its princes and guardian, was relieved from its first contamination by Mahommedan contact.

The second invasion, caused by the discontent of *Ali Mahommed* at the small spoil brought down to him, was stayed at the very entrance of the hills at *Barokheri Pass* (between *Bhamouree* and *Bheem Tal*.) where the Rohilla force was routed by the minister, *Seebdev Joshee* and his highlanders, who had seen too much of such visitors in the former year to allow them again to surmount the *Gagher*. It is generally believed, that the Rohillas were incited to both attacks by some domestic traitors of the *Rotela* tribe, one of whom, by name *Himmet Sing*, had been put to death by the Kumaon Rajah for rebellious conduct. The complete expulsion of these predatory foreigners from the open plain of the Terrai was found too difficult a task for the *Paharree* arms; and, hence, recourse was had to other means. *Kullean Chund* himself repaired to the camp of the Emperor, then pitched at *Sun-*

* Those who object to the hill people of Almorah as being unaccountably and foolishly scrupulous on the subject of kine killing, forget that Benares, Muthra, and other Hindoo localities have been for centuries under direct Mahommedan rule, whereas Kumaon never had one of "the faithful" as its immediate lord. The only *Mussulmans* formerly known within the hills were certain families of *Shikarries* and *cooks*—who received favor at the hands of the Rajahs, the former for killing game, and for ridding the country of wild beasts, the latter for preparing suitable food for any Mahommedan guest of rank. The Rajah of Bhurtpoor still entertains a similar class of purveyors.

† Near this spot is the beautiful country residence of the Kumaon Commissioner, which is highly convenient, as being on the borders of both districts, Kumaon and Gurwal.

him*, and implored for aid against his enemies. At that time (1747 A.D.), the extraordinary power obtained by the Rohillas had greatly alarmed the imperial Government, already sufficiently weakened by the Mahrattas and by Nadir Shah, and very strong efforts had been made to reduce them, attended with considerable success. Twenty-two descendants of the old *Kuttair Rajahs* are said to have been present in camp, headed by the chief of *Thakoordwara*,† all clamorous for protection. The Kumaon Rajah did not sue in vain, and the result of his visit to *Sumbhal* was a renewal of his *sannuds* for the *Chowarase Mal*, and the abandonment of the territory by the Rohillas, with the exception of the Eastern tract at *Surbna* and *Bilherce*, besides sundry marks of imperial favor. Soon after his return to the hills, he died, and the year of his death (1748 A.D.) also saw the decease of the Emperor Mahommed Shah and the adventurer Ali Mahommed.

9. The history of *Rohilkund* between the years 1748 and 1774 A.D. is well known. The constant conflicts

Reign in Kumaon of Deep Chund, and the contemporaneous account of Rohilkund to its conquest of by the Nawab Wuzeer of Oudh in 1774 A.D.

between the *Soobahdar* of *Oudh*, *Safter Jung* and the Rohilla chiefs, attended occasionally with no small disgrace to the arms of the former, (and through him to those of his master the Emperor *Ahmed Shah*,) terminated in the utter

discomfiture for a short period of the latter, by the introduction of the *Mahrattas* and *Jats* into the disputed territory as the formidable allies of the *Wuzeer*. Then followed, as might be expected, the usurping occupation of *Rohilkund* by those very allies themselves, and the attraction to that fertile quarter of their swarming countrymen from the *Deccan*. The revolutions which dethroned and blinded *Ahmed Shah*; which first exalted and then brought down to death his puppet successor, *Alumgeer II*; which linked together in the bands of temporary amity the regicide and self-elected *Wuzeer Ghazee-ud-Deen*, and many of the Mahratta leaders,—the advance of *Ahmed Shah Doo-ranee*, and the repetition at Delhi of some of the horrors enacted under *Nadir Shah*; and afterwards, on the departure of the *Abdallees* from *Hindoosthan*, the overwhelming height to which the flood of Mahratta

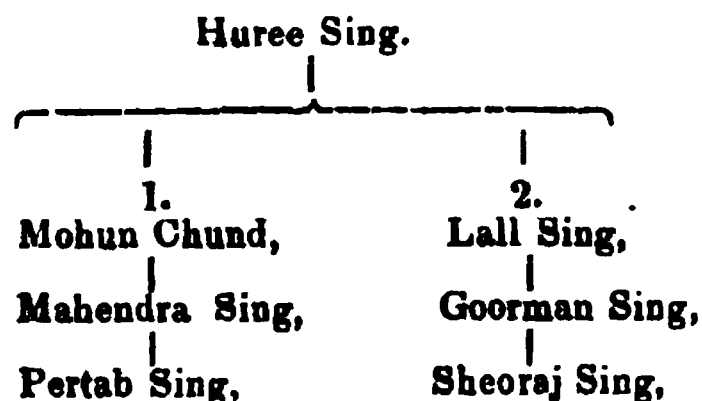
* I believe that the *Sote* then derived its name of *Yar Wufadar*, when the pukka bridge was built for the army, the Emperor having called it, “*Yar Wufadar dul tumun Sote*”

† Whose family is now, I believe extinct.

dominion attained ; these events accumulating on each other, involved the whole of Upper India in anarchy and confusion, and completed the destruction of the *Mogul* empire. As affecting Hindoosthan in general, they caused the minds of all men to be fixed on one great question, till the decision of which there could only exist two great parties ; viz. Who shall be masters, the *Mahrattas* or the *Affghans* ? As affecting *Rohilcund* in particular, the crisis of affairs united together by one common interest, the ruler of *Oudh*, then *Shoojah-ud-Dowla*, and the Rohilla chiefs, *Hafiz Re hmut Khan*, *Nujeeb-ud-Dowla*, and all the minor leaders of the clan ; and for a brief period, the chivalry both of *Oudh* and *Rohilcund* was engaged in a common cause. The battle of *Paneeput* might very probably have ended in a different manner, if the *Dooranee Shah* had not been thus assisted, and if he had not found on his side in that bloody field *Affghans* of the *Hindoosthanee* colony, as brave and undegenerate as his own *Abdallees*, fresh from the rugged passes of *Affghanistan*. Who on the evening of the 6th January 1761 A.D. contemplating that great battle field, and reflecting on its results, could have guessed or believed that the fate of India had really already been decided not five years before on an obscure swamp in Bengal ? or, have foreseen, that in regard to the sceptre of Hindoosthan, the slaughter of that day had been a fruitless sacrifice ; that the *Affghans* almost from that very hour would be strangers to the soil ; that the *Mahrattas*, then supposed to be an almost annihilated power, would again contest the throne of India with foreigners, but, of a still more distant origin and still more distinctive race ; or, that, finally, peace and plenty would smile on that very plain, invited to the land, neither by Mahomedan nor Hindoo, but by the Christians of a Western Atlantic isle ! Yet, to *Rohilcund* at least, (whereto my tale must return,) far different from peace and plenty were to be the intermediate gifts of the English race. When *Hafiz Re hmut Khan* flushed with his share of victory, returned to his own country, it may be assumed, that, even if no higher aspirations for the good of his subjects expanded his breast, he still fondly hoped that the good fortune of his race and family would henceforth be permanent ; that his last battle had been fought, and that he might be allowed to end his days in quiet and happiness. Alas ! the lapse of thirteen short years, not all ill-spent, we may hope, brought to

his door a totally unexpected enemy in purchased alliance with the ancient hunters of his line. If *then* at *Kutterah* on the 23d April 1774, the victorious English general turned away in sadness from the corpse of the gallant *Hafiz Rehmüt Khan*, and reviewed with pain and disgust the results of his own triumph, the civil narrator of this tragical revolution, however indignant at the gross misrepresentations and false colouring of facts, which both in the senate and the library have associated the early English name in Rohilcund with altogether unredeemable shame, and the extinguished rule of the Rohillas with every fancied virtue, may be excused for pausing one moment in his task, and yielding the tribute of his deep regrets over the bier of the Rohilla chief. But I must not travel further from my record. What was the effect of all the above named revolutions on the circumstances of the *Terrai*? The reign of *Rajah Deep Chund* in *Kumaon*, after lasting nearly thirty years, ended in his murder in 1697 Saka, or 1775 A.D. He was, therefore, almost from first to last, a contemporary of *Hafiz Rehmüt Khan*, and the catastrophes of the Rohilcund and Kumaon principalities occurred within a year of each other;—or, if nothing but the crowning success of the Goorkhas in 1791 A.D. can be considered as the conclusion of the Kumaon raj, the year of *Deep Chund's* violent death at the hands of *Mohun* Sing*, his spuriously descended cousin, may be recorded as commencing the fifth act of the hill tragedy. During the first sixteen years of his reign, *Deep Chund* enjoyed the advice and aid of the wise minister or *Bukshee*, *Seeb-dev Joshee*, to whose care the dying lips of *Kullean Chund* had entrusted the youthful prince. The trust appears to have been well fulfilled, and during this period the management of the *Terrai* occupied a large share of the *Bukshee's* attention. Forts were built at Roodurpoor and Casheepoor, as outposts to watch the Rohillas,

* As some mistakes are often made as to the relative position by birth of *Pertab Chund* at *Almorah* and *Sheoraj Sing* at *Casheepoor*, I give their immediate genealogy :—



and to guard the property, then far from inconsiderable, at both these places. At the former place, *Hurree Ram Joshee*, a Kumaonee and cousin of Seeb-dev, and at the latter place *Sree Ram Doss*, a native (I believe) of *Baspoor*, acted as the agents of the Kumaon government. The son of *Sree Ram Doss*, *Nundram* by name, is celebrated in Kumaon history, as the traitor, who in conjunction with his brother *Hurgovind*, for selfish purposes, ceded the possession of the Terrai to the *Nawab Asoph ud-Dowla*, after murdering Hureeram Joshee's son, *Munooruth*, and thus obtaining power over Roodurpoor and the Eastern Pergunnahs. The nephew of Nandram, and son of Hurgovind, *Seeb Lall*, is the person whom in 1210 Fuslee, the English found in power in the Terrai, and with whom the first settlement of that tract was made. We have now all the *dramatis personæ* on the stage, before the curtain drops on the scene, at the close of Kumaonese influence in the Terrai. During Seebdeo's administration, the Rohillas did not disturb in any great degree the tranquillity of the Kumaon lowlands. Their chiefs, during the frequent flights which they made to the foot of the hills when they had encountered any disasters below in conflicts with the Wuzeer's forces, formed an acquaintance with the hill Rajah and his Ministers, which in some cases ripened into friendship. *Deep Chund* and *Hafiz Rehmat Khan* exchanged turbans, and *Seebdeo's* son, *Hurackdeo Joshee*, who afterwards became so conspicuous a political character at the period of the war between the British and Nepalese, enjoyed a place of trust in the immediate household of Nujeeb-ud-Dowla. At the battle of Paneeput, Hurree Ram Joshee is said to have distinguished himself conspicuously amongst the levies brought to that place from the Rohilkund territory, and to have carried back to Kumaon an elephant and other plunder of the Mahrattas to the extent of some thousand rupees, which the Rohilla chiefs accorded in return for the aid or goodwill of the Kumaon Rajah at that great crisis.

10. The Terrai remained in a state of (comparatively speaking) fair

Conclusion of Deep Chund's reign.—Troubles of that period.—Effects of events, both in hills and plains, on the state of the Terrai.—And summary of events antecedent to the final separation of the lower Bhabur from the hill territory.

prosperity during that portion of *Deep Chund's* reign, in which the hill territory was undistracted by internal commotions. Up to the death of *Seebdeo Joshee* in 1686 Saka, corresponding to 1764 A.D., these commotions had been very partial and trifling in *Kumaon*, while at the same time

the plains of *Hindoestan*, including *Rohilcund*, were the scene of constant disturbances and change. The Terrai became filled with emigrants from the lower country, who had fled from the extra-taxation, and the multiplied masters, which the wars of that period had created. This was the first great recent emigration into the Terrai. The next extensive influx of lowlanders occurred immediately after the accession of the *Nawab Vazeer*, as above related, to the sovereignty of Rohilcund, and continued till the tyranny of the new reign had somewhat over-past, and till (after the second Rohilla war with *Fyzoolah Khan*, who himself brought large numbers of people to the jungle, where his entrenchments were formed,) the lower districts became again fit for the habitation of peaceful and industrious people. Thus, at first, tolerable good government at one place, and intolerably bad government at another, contributed to the occupancy of the waste lands of the *Kumaon Bhabur*, by natives of other districts; and a few years subsequently, the *Ghoorkallee* invasion of *Kumaon*, and the civil wars which preceded that event, drove down numerous mountaineers to the same quarter, and made *Casheepoor*, *Roodeerpoor*, *Kilpoory*, and other frontier towns and villages the emigrant settlements of numerous individuals, whose political importance or wealth rendered them peculiarly obnoxious to the evil of a revolution, and whose stay on the hills had become incompatible with their safety. We may, I think, date at this period the planting of the numerous mango groves* in the Terrai, which at this day so frequently surprise the sportsman, in spots where wild beasts occupy the place of human inhabitants, and swamps lie over the site of villages.†

The death of *Seebdee* by violence in a military emeute at *Casheepoor*, occurred as above recorded in 1686 Saka, or 1764 A.D., and from that time I much doubt whether the dependency to the hill state of Kumaon of the whole Terrai (except a slip of forest at the very base of the hills,) did not cease and determine. While that minister sur-

* There are other groves of older date no doubt, as there are ancient wells, and *chubootras*, remains of aqueducts and the like; but the existing groves for the most part do not appear older than 60 or 80 years.

† Some *Puthan* families were great benefactors of the Turai for a short time, and the large *gools* and gardens which bear the name of *Jungee Khan* and others, attest their former influence, especially in *Bazpoor* and the western *Pergunnahs*.

vived, the rent roll of the *Chowrassie Mal Pergunnahs* is recorded to have been as follows; but, there is strong reason to believe, that both in the time of *Shoojah-ud-Dowla* and in that of his predecessor *Suftur Jung*, the *South-Eastern* extremity of the *Kumaon Bhabur* had fallen into the hands of the *Vuzeer* or the *Rohillas*, and that the *Kumaon Rajah* was merely considered in that quarter, *nominal Zemindar* or *Jagheerdar*.

Pergunnahs at present attached to Zillah Moradabad.

Jasspoor,	...	...	...	50,138	0	0
Casheepoor,	...	...	...	95,648	0	0
Bajpoor,	...	...	...	55,664	0	0
				<hr/> 2,01,440 0 0		

Pergunnahs now attached to Zillah Bareilly.

Roodurpoor,	...	...	...	72,207	0	0
Gudderpoor,	...	...	...	45,654	0	0
Kilpoory,	...	...	...	40,000	0	0
Bilheeree,	}	...	...	75,910	0	0
Bindara,						
Nanukmutta,						
Surbna,	..	..	...	25,000	0	0
				<hr/> 2,58,771 0 0		
				<hr/> Total Rupees 4,60,211 0 0		

Of this total sum, Rs. 1,32,000 were estimated as the *Rajah's share*, supposing the sovereignty of the Kumaon ruler in this tract to have been a reality; or *proprietary profits*, supposing him to be entitled only to the name of *Zemindar*. Out of this royal share or *revenue*, (the greater part of which was collected in kind,) the military assignments

* It is also highly probable, that some portion of this amount was collected on account of *kātibāns*, or timber duties, in the forest lying to the north of the Chowrassie Mal, and still included in Kumaon.

to the *Nuggur Kotias* and others were paid, and Rs. 40,000 are (I believe with complete truth,) mentioned as forming the highest amount remitted to *Deep Chund's* treasury at *Almorah*.^{*} In the earlier times of the Terrai, the *Rajah* dealt more directly with the cultivators of the soil, and the intervening tenures, religious, *mafee*, military, and the like, did not exist; hence, the large amounts recorded as *revenue*. In regard to the *cultivators*, the *Rajah's* share was considered to be a sixth of the produce; but, this fact would militate greatly against the stories handed down of the *Nowluckia Mal*. Fifty-four lacs worth of produce in the narrow slip of the *Chowrassie Mal*, would indeed have entitled it to a high rank among the many so-called gardens of India.

The remaining portion of the rental enumerated in the statement was collected for the benefit of some few Brahmin Mafeedars and some hill temples; but principally at that period by the headmen among the hereditary *Chokedars* of the *Terrai*, who had been gradually introduced into the territory from the time of *Baz Bahadoor Chund's* visit to Delhi. In the south-eastern extremity of the *Bhabur*, the race of *Burwaicks*, and in the same direction nearer the hills, the *Joteals*, and in the Western Pergunnahs the *Mewattees* and *Heirees* (Mussulmans,) were the guardians, but in fact, the possessors of the soil; and a system of "black mail" was thus introduced, the evil effects of which remain to this day, and which during its continuance, rendered the sub-montane tract the general safe resort of the banditti, at the same time that it gave protection to a portion of the community; that is, those who could afford to pay the insurance fees thereof; and saved others from outrage and plunder only by making them connivers, through shelter and concealment, with the worst of criminals. *Hurrukdeb*^{*} *Joshee* and *Jyekishen Joshee* succeeded their father as Ministers, and soon after both *Casheepoor* and *Roodurpoor* were plundered by predatory bands of *Pathans*, who are stated to have found a large quantity of booty at those places, owing to the temporary inhabitancy thereat, of the earlier emigrants of whom I have spoken.

^{*} The direct lineal descendant of this personage, called by Mr. Fraser "the Earl Warwick, or king-maker of Kumaon," is, I am sorry to say, living in very reduced circumstances, and without a pension at Almorah, while others, with smaller claims are provided for.

The years between 1764 and 1775 A.D. formed a period of trouble and distress in Kumaon, which, however, has its parallel in every native state, and the natural consequences of which were the final foreign invasion which took place 16 years afterwards in 1791, and the intermediate visitations of mercenary troops brought into the province by the partizans of the several factions. A summary of events for this period exists in the Agent's office at Almorah, and is contained in a report dated 20th October, 1814, by Mr. W. Fraser, who appears to have received his chief information from *Hurruck-deb Joshee*. The following extract is made from the report,* explaining, quite sufficiently for the present purpose, the revolutions of that period within the hills.

Extract.

“ The eldest son of Seebdeo Joshee, Jyekishen, succeeded him
 “ in his office and situation as prime minister and viceroy, in which
 “ place he continued for two years and a half, when a son was born to
 “ Deep-Chund the Rajah. On this event the mother of the boy con-
 “ sidering that in consequence of having a son, she had some claim on
 “ the regency, intrigued with Hafiz Rehmud Khan of Rampoor,
 “ through Jodha Sing of *Kuthere*, to whose son the daughter of the
 “ Rajah was betrothed, and who was a favourite servant of Hafiz
 “ Rehmud Khan, to set aside the authority and viceroyalty of Jyekishen,
 “ who retaining his office, should obey the command of the Rannee.
 “ Through the interest of Jodha Sing, Hafiz Rehmud was prevailed
 “ upon to speak to Jyekishen, and he in disgust and disappointment
 “ resigned all his situations and retired from the government. The
 “ Rannee then bestowed the situation of *Bukahee*, or head of the
 “ army upon Mohun Sing, the post of prime minister upon Kishen
 “ Sing, the Rajah's bastard brother, and the viceroyalty on Purmanud,
 “ a paramour of her own. Jodha Sing gained the management of
 “ Casheepoor, a large Pergunna. About a year after this, the Rannee
 “ deprived Mohun Sing of his appointment and insignia of his office,
 “ bestowing them upon her favourite paramour. Mohun Sing fled to
 “ the *Rohillas*, and through the assistance of Doondee Khan of Bir-

* Evidently a translation.

“soulee, who was jealous of the power and influence Hafiz Rehmut
“Khan exercised in Kumaon, gathered a body of troops and Rohillas,
“attacked the capital of Almorah, defeated the Rannee’s troops, and
“eight months after his expulsion, obtained possession of the Rajah’s
“and Rannee’s persons, and established himself in the government. One
“of his first acts was to put to death Purmanund, his first enemy,
“and about two years afterwards, during which time he continued
“quite paramount, he put the Rannee to death. When this act was
“known, Hafiz Rehmut Khan again sent an army with Kishen Sing,
“the brother of the Rajah, who had fled when the Rannee was
“killed, expelled Mohun Sing, and put authority into the hands of
“Kishen Sing, who with the assistance of Jyekishen, and the old
“respectable officers of the government, carried on business for
“four or five years. Mohun Sing had fled to the camp of Zabeta
“Khan, and subsequently to that of Shooja-ood-Dowlah. Kishun Sing,
“the viceroy of the Rajah, fell into bad hands, and paying attention
“to favourites, dishonoured many of the old respectable servants of
“the government. These people considering that Mohun Sing, al-
“though expelled, would not desist from disturbance and intrigue, agreed
“to call him, and put the government into his hands, to be exercised in
“the name of the Rajah, and with the assistance and advice of Jyekishen.
“Mohun Sing being thus placed in power, in the course of the second
“year put the Rajah and all his family into confinement, treacherously
“murdered Jyekishen,* and established himself firmly in the go-
“vernment. This usurpation seemed bad in the eyes of the Ra-
“jahs of Ghurwal and Dotie. They leagued with the discontented
“people of Kumaon; the injured family of Jyekishen, one of the oldest
“and most respectable of the high officers of Kumaon, collected a
“large force, defeated and expelled the usurper, and established Purdoo-
“mun Sah, the second son of Lulut Sah, the then Rajah of Ghurwal,
“upon the rajship. Purdoomun Sah reigned 9 years, proped by the old
“officers of the state, amongst whom the most noted was Jeeanund,
“Gudadhur and Huruckdeo, of the family of Seo Dev and Jyekishen :

* At that time Nundram and others had possessed themselves of the Terrai nearly to the foot of the hills, and Mohun Sing invited Jyekishen to his camp near *Chokum*, (some miles above Chilkeea,) to arrange for a common defence of the Terrai against the lowlanders. Jyekishen fell into the trap, came to camp, and was assassinated.—

“ after this lapse of time, Lulut Sah, the Rajah of Sreenugur dying, the
 “ brothers, Jykurut Sah who had succeeded to the rajship of Ghurwal
 “ on the death of his father, Lulut Sah, and Purdoomun Sah who had
 “ been set up in Kumaon, quarrelled. Jykurut Sah was desirous of es-
 “ tablishing Mohun Sing in Kumaon to the prejudice of his brother,
 “ having been bribed by him; and Purdoomun Sah was naturally
 “ anxious to expel his elder brother and establish his younger and full
 “ brother Puracram Sah at Sreenuggur. In the mean time, Jykurut
 “ Sah died; and Purdoomun Sah leaving Kumaon against the will of
 “ all, went to take possession of Ghurwal. He wished indeed to leave
 “ his younger brother Puracram Sah in Kumaon, but he was equally
 “ desirous of seizing upon Ghurwal; this strife continuing, both left
 “ Kumaon in the charge of Hurruckdeo, and (shortly after uniting with
 “ Mohun Sing) fixed him there. Hurruckdeo being driven out, collected
 “ an army in the districts of Casheepoor and Roodurpoor, again attacked
 “ Mohun Sing, took him prisoner and placed him in confinement, and
 “ in retributive justice for the murder of the late Rajah and all his family,
 “ had him put to death.* He did not continue many months in pos-
 “ session of the country, when Lal Sing, the brother of Mohun Sing,
 “ receiving the assistance of Fyzoollah Khan of Rampoor entered Kuma-
 “ on, and drove Hurruck and his party to the frontier of Ghurwal, where
 “ receiving assistance from Purdoomun Sah, he repelled the invading Ro-
 “ hillas, and regained possession of Almorah, the capital. Puracram
 “ Sah, however, always unsteady and unreasonable, took the part of
 “ Lall Sing; and Hurruckdeo deprived of his assistance, retired with
 “ honor to Sreenugur. Lall Sing did not however reign long. A year,
 “ or a year and a half after, the Goorkha power invaded the country, when
 “ all the discontented people, and particularly the family of Jyekishen and
 “ Hurruckdeo took refuge with them and rejoiced in Lall Sing’s final
 “ expulsion.”†

* Mohun Sing was beheaded in the temple called *Narain-ke-Than*, two miles to the North of Almorah, on the hill now called “Mount Browne.”—

† This report must throughout be taken *cum grano*, for though true in regard to the main facts, there is throughout a strong bias against the family of Mohun Sing and Lall Sing, and an equally strong partiality towards the great rival family of the Joshees. There is also one omission; viz. that Hurruck Dev at one time set up a nominal Rajah, a near relation of Deep Chund, and called him *Seeb Chund*, afterwards degrading him, and there is one exaggeration; viz. that Mohun Sing gave up

The murder of *Monoruth Joshee*, the agent of the Kumaon government at *Roodurpoor*, by *Nundram* of *Casheepoor*, an event previously glanced at, combined with the treacherous murder of *Jyekishen Joshee* by *Mohun Sing*, as narrated in the above extract, placed the whole power over the *Bhabur* tract at the disposal of *Nundram* and his family, and he took the best steps for securing his position, making terms with the *Nawab Vuzeer*, then *Asoph-ud-Dowlah*, and by becoming *Ijaradar* of the territory under that ruler. After two or three weak and ineffectual struggles in the field with the *Ghoorkas*, *Mahender Sing* and his brother *Lall Sing* were finally obliged to abandon the hills, and settled at *Kilpoory* in the *Terrai*, under the protection of the *Nawab Vuzeer*, obtaining thereby a guarantee for the retention, by the family, on some doubtful kind of tenure of some portion of the tract, over which their ancestors of the *Kumaon Raj* had ruled, and which as far as any actual *Jagheer* was concerned, was subsequently exchanged for the grant of *Chachheit*, which is situated in a more Southerly direction. Between 1791 and 1802, when the cession of Rohilcund to the British government took place, the *Ghoorkas* were too much occupied within the hills to bestow much attention to the old lowland territories of Kumaon; but they obtained for sometime possession of *Kilpoory*, and they were afterwards driven out by the forces under *Ata Beg* and *Sumbhonath* sent from Bareilly, aid having been implored by *Mahender Sing* and *Lall Sing* who had been forced to fly to *Luknow*,* and the danger on its northern frontier in *Rohilcund* having become a source of deep anxiety to the *Oudh durbar*. *Casheepoor* then became the principal residence of the exiled family; but *Roodurpoor* was also often visited, and from their statements, it would appear, at that time to have been a flourishing place. *Pertaub Sing*, indeed, informs me, that even until so late a period as 1815, when the march of the British troops to

Almorah to Rohilla rule, whereas this was not exactly the case; as *Mohun Sing* employed mercenary Rohilla troops who occupied at times the capital, so also did *Lall Sing*, and so did *Hurruckdeo*, and afterwards the British; but in all these visitations the Brahmins governed both Almorah and the province, and the Rohillas never even had a mosque for their prayers. *Hurruckdeo's* rescue of Almorah was thus, after all, not so very great an act of patriotism, as the report would appear to make it.

* *Hurruckdeo* about this time (1797 A.D.) was in attendance on Mr. Cherry at *Luknow* and *Benares*, and endeavoured to interest the British authorities in favour of the Hill Rajahs against the Goorkas.

the hills, combined with other visitations, more especially banditti, harassed the inhabitants by requisitions and looses of all kinds, that place* could boast of 1,200 *Brinjarries* with their equipage, 200 hackeries and their owners, 200 weavers, and 700 families of *choomars*, *koormees*, *lohars*, &c., in addition to a large agricultural population, and the numerous occasional followers of his father and uncle, with other exiles from the hills.

11. I have thus brought to a conclusion the history of Kumaon, chiefly in connexion with its dependencies in the lower Terrai, otherwise called *Bhabur*, *Munes*, and *Mâl* by the *Puharrees*, and I believe that, however unimportant, the information thus given, is for the most part new. Knowing little, I can tell little of the further history of the Terrai, and it would be presumptuous in me to intrude on ground which belongs to the *Plains* authorities.† The abstract of all the intelligence acquired by me on this subject, may however be briefly recorded. The rule of the *Nawab Vuzeer* in the *Mal Pergunnahs* was, on the whole, beneficial, but, chiefly in a negative point of view. The bad government of districts, naturally more adapted for culture and habitation, drove large colonies of people from the south to a region where the background of the forest and the hills could always afford a shelter against open oppression; where the nature of the climate was not such as to invite thereto the oppressors in whose hand a whole fertile and salubrious land had fallen; and, where, also, on this very account, the rulers, who did exist, found it their interest to conciliate and attract all new-comers. The management of the territory in question by *Nundram* and *Seeb Lall* is generally well spoken of, except in the matter of police; but, even in this latter respect, the mismanagement was not more injurious to society, than the state of affairs in regard to the *forest-banditti* became in times not far distant from our own. I believe that it may be confidently stated, that at the commencement of the British rule in Rohilcund, there existed in

The Government of the Nawab Vuzeer, and of the British. Reflections thereon and on the state of the country, with allusions to that part of the *Bhabur* still included in Kumaon —Conclusion.

* *Roodurpoor* was partly ruined by the establishment of the Hill *Mundee* of *Huldwane*, 20 miles nearer the hills, and then completely, by the swamp caused by the Nawab of *Rampoor's Bund*.

† Not only present, but past.

the Terrai a greater number of inhabited spots than there existed 30 years afterwards in the same tract; that more, and more careful, cultivation was visible in every direction; that the prairie, if not the forest, had retreated to a greater distance; that the *gools* or canals of irrigation were more frequent and better made; that more attention was paid to the construction and management of the *bunds* on the several streams; and that, finally, on account of all these circumstances, the naturally bad climate, now again deteriorated, had somewhat improved. While recording this statement, I must not omit to add, that I myself possess no positive separate proofs that my assertions are correct; but that I write under the influence of almost universal oral testimony, supported, nevertheless, by this circumstance; viz., that the revenue statistics of the tract under discussion, shew a *descending* scale in regard to the income of the state, a product which under general rules, bears an approximately regular proportion to the amount of prosperity in a country. Nor, must I omit the fact, that the *Boksa* and *Tharoo* tribes are extremely migratory in their habits, and are peculiar in requiring at their several locations more land for their periodical tillage, than they can shew under cultivation at one time, or in one year. To these tribes, is in a great measure *now* left the occupation of the Terrai territory, so that *now* for every deserted village, there may be perhaps found a corresponding newly cultivated one, within the same area; and large spaces of waste may intervene, where under the present system, no room for contemporaneous cultivation is supposed to exist; the periodical waste or fallow, also, in that peculiar climate, presenting as wild and jungly an appearance as the untouched prairie. In the times, on the contrary, which I have advantageously compared with our own, the fickle and unthrifty races whom I have named, were not the sole occupants of the soil, and the number of contemporaneous settlements was therefore greater, and the extent of land required for each was less. I, therefore, come round in due course to the next fact, (the obverse of that first stated,) that, as bad government in the ordinarily habitable parts of the country introduced an extraordinary number of ploughs into the borders of the forest tract, so, the accession of the British rule, by affording a good government to Rohilcund, re-attracted the agricultural resources to that quarter, and proportionately reduced the means

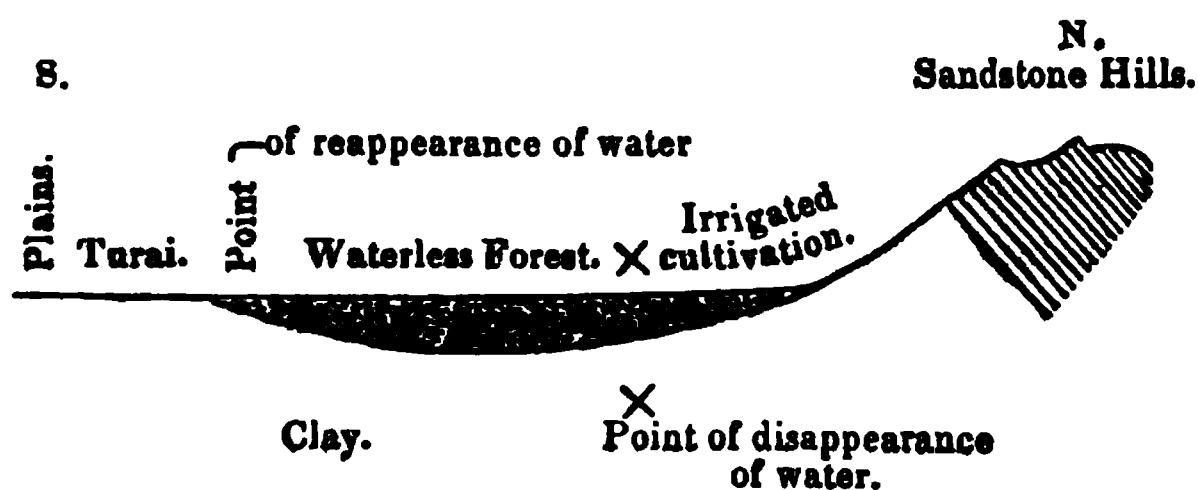
of tillage in the Terrai. Such is my general position ; but, local circumstances also added to the deterioration ; and amongst these, an allusion on my part is all that is necessary or proper to the hasty and perfunctory mode of settlement adopted in the earlier years of the British rule, to the disputes in and out of court, concerning *Zamindarry* rights between *Seeb Lall* and *Lall Sing* ; and again between the latter and his elder brother Mahendra Sing's family ; to the continued bad police management ; and, perhaps more than all, to the neglect and difference of the English revenue officers, who were scared away from the tract by the bad reputation of its climate, and only occasionally attracted thither by its facilities for sport.

In fact, the sum of the whole matter is, in my opinion, this : that even long neglect in other quarters can by a change of system, be speedily remedied ; but, that in the peculiar region of which we are treating, a very brief period of neglect or bad management is sufficient to ruin the country. Its physical character has been well described by others, but more especially and directly in the recent Irrigation Report of Captain Jones, and incidentally in the lately discovered and published Geological Report by the late Captain Herbert.* Under the base of the hills, surface irrigation from the several streams that issue therefrom, can be carried on without difficulty to a certain distance on either side of them by means of water-courses taken off at different levels, this distance or point of non-irrigation being determined by the slope of the country, and the absorbing or retaining qualities of the soil, and consequently by the time of disappearance of water in the several rivers. Hence, in the *Upper Bhabur*, so long as an agricultural population can be found, extensive patches of fine cultivation† will always exist ; but, at wide intervals, and with but a short prolongation to the Southward. Then, succeeds the *ohāur bhoomes*, or dry region of forest and prairie, beneath the rich mould and enormous beds of gravel of which, at an hitherto undiscoverable depth, flows the drainage of the lower mountains ; the point of re-appearance of water

* Journal Asiatic Society, Vol. XI, the map published with Vol. XIII.

† The superficial soil in the Bhabur when well irrigated, supplies admirable crops of wheat, mustard and the like ; but is said to be too light for sugar-cane, cotton and other staples ; my own opinion is, that every thing could be produced, if the cultivators were permanent and of an industrious race, instead of being only *hybernating Pularrees*.

in the river beds, and the rushing out of the numerous springs being determined by the thinning out of the porous gravelly detritus, and the approach of the clay, or *impervious stratum* to the surface, thus :



The *Lower Bhabur*, or special Terrai, succeeds, and reflection and observation both shew, that if left to itself, this region must become one of swamps and malaria, and only partial cultivation ; whereas, if carefully watched, its evils of climate may be vastly amended, and its agriculture be only limited by its amount of population. A careful guidance of the waters from their several sources would prevent the formation of the swamps on the lower edge of the forest. The rapid slope of the country causes the streams to push along the superficial gravel mixed with trees and vegetable mould, and thus to form at last an obstruction *a-head of themselves*. This causes numerous windings of the streams, and at every corner a back water swamp is produced, which would have had no existence, if the current had been carefully conducted, or if the obstructions in its course had been removed, or an opening through them been made. In the same manner the proper placing of the several *bunds* on the streams, and a proper attention to outlets of canals thus formed, would prevent the evils now arising from embankments which enrich one village, or set of villages, at the expense of the whole neighbourhood ; and from water-escapes, which irregularly flood all the adjacent lands, and create grass *koon-duls* and swamps for tigers, deer, and hogs, while they drive out the human inhabitant.

These are common illustrations, and are sufficient to prove my argument for the absolute necessity of official and even scientific attention being paid to the physical character of the Lower Terrai, the additional benefits of a good revenue management, and a good police being,

at the present period assumed. I trust that the force of this argument will not be weakened by its not being *original*. The improvement of the *forest-tract* can be effected by the cutting of broad roads through it to the several points of access to the hills, and by extension of the *Puharree* clearings at its northern edge by a better and more economical distribution of the available means of irrigation. But, it still remains a matter for science to determine, whether except in the case of large rivers, (for instance the Ramgunga and Kosillah,) which on account of their volume and force escape absorption into the gravel, any canals can be taken off from *common* streams, at their exit from the mountains, and carried continuously through the forest. If they can, I would be content to sacrifice some portion of the partial cultivation carried on by the Hillmen at the immediate foot of the hills, by means of their numerous separate water-courses. If they cannot be made so as to bring a large and continuous portion of the forest and prairie into cultivation, I am hardly prepared to recommend much interference with the present system of irrigation in the *Upper Bhabur*, however wasteful, in the mere attempt to prolong a mile or two further the *Puharree* cultivation, and to add to the number of villages, paying almost nothing to the State, while they decrease the pasture grounds required by the herdsmen, both of the plains and the hills, at that very portion of the forest where the means of supplying water to the cattle alone exists.* As, however, the subject of the *Kumaon Bhabur* as distinct from the *Rohilkund Terrai* will form the subject of a separate report in the ordinary course of my official duties, and, as the upper tract is quite prosperous enough not to require any immediate special remedies, I here drop my pen.

Almorah, 9th October, 1844.

J. H. BATTEN,

Senior Assistant Commissioner, Kumaon Proper.

* The forest here alluded to, is almost utterly useless for timber, though its pasture grounds are admirable. All the valuable timber is now confined to the foot of the hills and to the lower range, and the *sissoo* islands in the river beds. This is a fact little known, but quite true.

The Osteology of the Elephant. From the India Sporting Review.

I am induced to take the following subject for my first essay in the pages of the India Sporting Review, (to which be length of days and unrivalled success,) by the simple fact, that of the engravings produced in Europe, affecting to be faithful representations of

“ The huge earth-shaking beast,
The beast that hath between his eyes
The Serpent for a hand”—

Scarce one in the dozen does not outrage nature most unmercifully ; of course I include under this head neither *all* illustrations of Zoology, nor the productions of artists, professional or amateur, resident in India: though in several lithographs after the latter, which have fallen under my inspection, I could point out errors, probably not existing in their original drawings while many of the former are radically wrong. The prevailing absurdity in the engravings I allude to, is giving the elephant *hocks* ! ! ! the perpetrators of which would appear to have adopted the idea (and selected their model accordingly) of the elderly Scotch lady in ‘The Last of the Lairds.’ who exclaims, while admiring a painting of a tiger-hunt—“ Eek ! Sirs ! wha’d ha’e thought it?—that y’r eelephant, after a, should be naithing mair than a muckle pig wi a langer snoot,”—a deprecatory comparison truly of the animal on which Milton has deservedly bestowed the epithet “ half-reasoning.” Leaving his mental capacity in such excellent hands, I proceed to the object I have in view, a delineation of his bodily peculiarities, and of the machinery by which such a mass of living flesh and blood performs it’s functions.

It is well known that the sculptor or painter who should attempt the human form, without adequate knowledge of the osseous framework and its muscular clothing, would produce but a sorry resemblance of the paragon of animals ! In like manner, ignorance of the internal structure of the elephant, so unlike that of all other quadrupeds, has doubtless caused these numerous false drawings of it’s external appearance, and which I presume to think the annexed outlines will serve to rectify. The design of the first was sketched

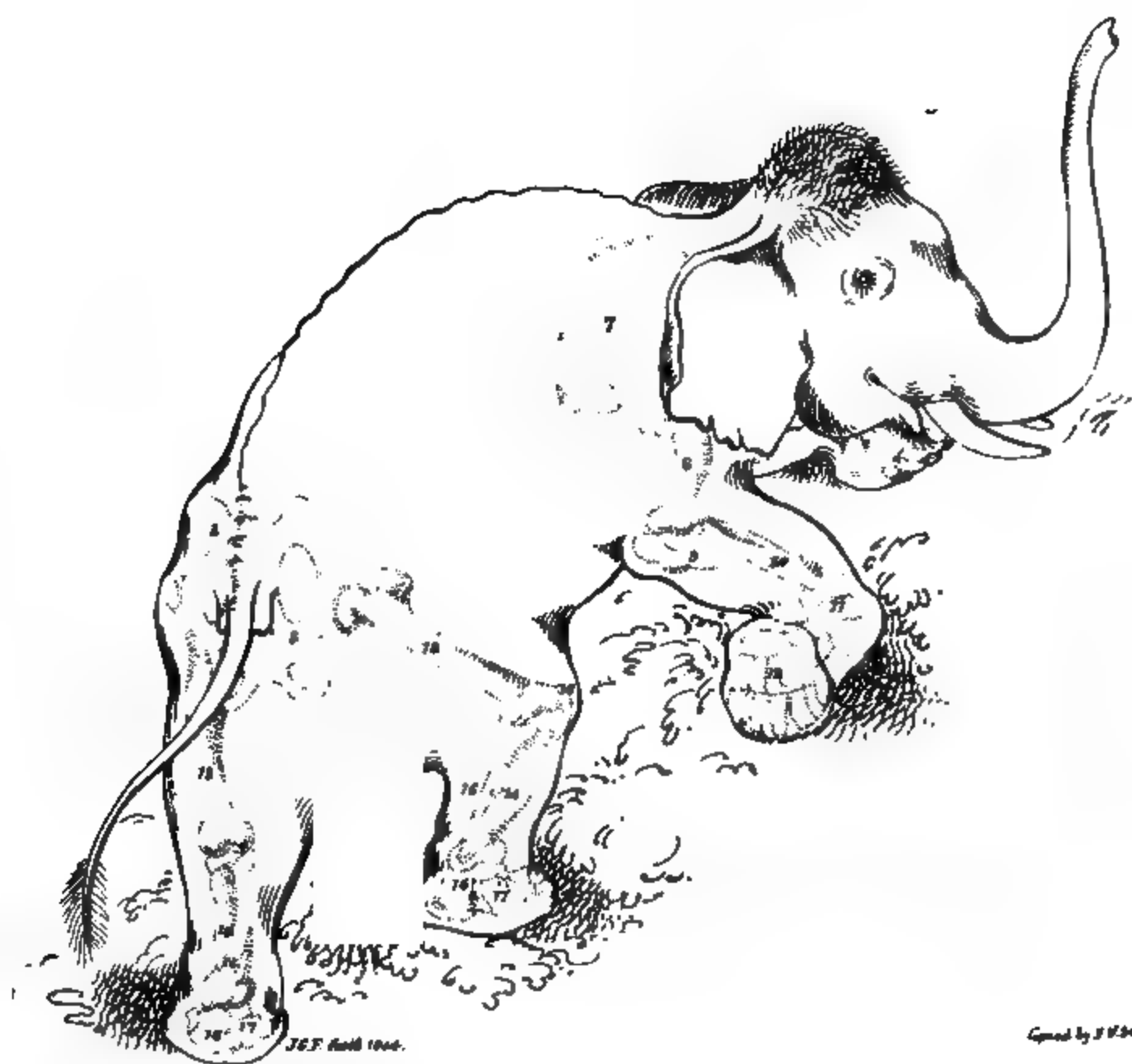
some years ago for my own guidance, and shortly afterwards compared (in doing which I had the assistance of a sporting friend, no other than our own Asmodeus) with the articulated specimen in the Museum of the Asiatic Society. In the same apartment were skeletons of other mammalia—the *Rhinoceros Indicus*, *Felis Tigris*, *Felis Leopardus*, *Sus Scropha*, &c., and while viewed in Juxta-position with these, a casual observer might imagine the elephant deficient in the number of bones usually forming the legs. Not so, the comparative anatomist who detects the same plan regularly followed throughout all the class, varied only by the elongation, or otherwise, and arrangement of the carpal and metacarpal, tarsal and metatarsal bones, as also of the digital phalanges. The posterior extremities of our subject (due allowance being made for great difference in length and size) seem to approach more nearly to the inferior ones of the human skeleton than those of any other quadruped. The Vertical position of the sacrum adds to this similitude, while the lateral power bestowed by the articulation of the thigh and knee joints, is visible externally—as a favorite position of the animal, while tethered and at rest, is supporting the weight of his hinder quarters on one leg, while the other is thrown in a *stand at ease* manner across it, one foot resting carelessly upon the other.

Plate 1. The head, excepting the lower jaw, is drawn in section, showing the situation of the brain and its defences; also, the process of dentition, in which one, the foremost, grinder is seen to be superannuated and gradually disappearing; the next, the centre one, in present use, and the third decending to take the place of the last in due course. This singular system of decay and reproduction is said to occur eight times in the life of the individual.*

* I have now before me the skull of an elephant which died here about a year ago;—it presents the peculiarity of having no grinder on the right side of the lower jaw; whether this was a natural defect or the result of an accident is not known. If the latter, it must have happened many years ago, as the alveolus is entirely ossified over, a slight hollow alone appearing, while the corresponding grinder above, instead of having the usual jaggy polished under-surface, showing the arrangement of enamel and bony substance, is rounded and covered with the opaque cortical matter. Its predecessor, which is much reduced, and was attached to the head by only a single root, is also rounded below, but is slightly polished, with some of the enamel appearing.



Fig. 1.



- A.** Cavity of the brain.
- B.** Space occupied by bony cells, between
- C.** the outer, and
- D.** the inner tablets of the Skull.
- E.** Opening of the nostrils.
- F.** Alveolus of the tusk.
- G.** Old molar in a state of diminution and decay.
- H.** Perfect molar.
- I.** Embryo molar, progressing forwards and downwards.
- K.** Inferior maxillary.
- 1.** Cervical vertebræ, 7 in number.
- 2.** The ribs—19 on each flank.
- 3.** Bones of the Sacrum.
- 4.** The caudal vertebræ, 24, in number.
- 5.** The Sternum.
- 6.** The clavicles. (?)
- 7.** The Scapula.
- 8.** The humerus.
- 9.** The ulna.
- 10.** The radius.
- 11.** The Carpus, comprising 7 bones.
- 12.** The metacarpus, and interior digital phalanges, five in each foot.
- 13.** The femur.
- 14.** The tibia.
- 15.** The fibula.
- 16.** The tarsus.
- 17.** The metatarsus and posterior digital phalanges, four in each foot.
- 18.** The patella.

Plate II, Fig I. An elephant descending a bank of too acute an angle to allow of his walking down it laterally, which, were he to attempt doing, his huge body, soon exceeding the centre of gravity, would certainly topple over. His first manœuvre is to kneel down close to the edge of the declivity, having his chest upon the ground; one fore leg is then carefully passed a short way down the slope, and if there is no natural projection adapted for firm footing, a step is speedily kicked out of, or pressed into the soil, according to the state of dryness or moisture it may be in. This point gained, the other

fore leg is also brought down, and performs the same work a little in advance of the first, which is now at liberty to move still lower—when, first one and then the other hind leg is cautiously slid over the side, and the hind feet in turn occupy the resting-places made, used, and left by the fore ones; and so on, the course not being direct from top to bottom, but sideways, until the level be regained. This is done at more than an angle of 45, while the animal has the weight of a howdah, it's occupant, his attendant and sporting apparatus, adding to the difficulty of the performance; and that in a much less space of time than would readily be imagined.

Plate II. Fig. 2. Represents the reverse of fig 1., viz., an elephant ascending a similarly steep bank by the same process, except the kneeling down at the commencement.

I had some idea of adding a third drawing, that of a complete figure of the elephant, undefaced by lines, dots, figures, or letters; but as I purpose sending you a series of Tiger-hunting Scenes, you and your subscribers (should my attempts be thought worthy of being submitted to the engraver or lithographer) will have specimens enow of the *Elephas Indicus* ere the Review be much older.

Dacca, Dec. 1844.

J. G. F.

P. S.—Since writing the above, I have received a Zoological work, which fully bears me out in the strictures with which I commenced this paper. It is lettered “Naturalist's Library. Mammalia, Vol. V., Elephants, &c.” Many of the volumes of this work are well got up, and contain tolerably faithful illustrations of the letter-press: but here, again, the elephant meets with his usual misrepresentation: *Imprimis*,—The title-page presents us with a vignette purporting to be “The elephant of India, caparisoned,” and behold a ‘*monstrum horrendum, informe ingens*,’ with hocks of course whose forebears, after their kind, never saw the inside of the Ark, I'm very certain. But making some allowance for a vignette, turn we to the body of the book, and next find Plate II., “Elephant of India,”—differing from the vignette 'tis true, but not a whit nearer to nature;—hocks again, line of the belly horizontal, more mounds on his back than the Bactrian camel's, and length enough from proboscis to tail for an elephant and three-quarters. Plate III. “Elephant of India, caparisoned for hunting.” Very faulty, but a visible improvement on

the foregoing:—and why? The plate is a pictorial plagiarism on one of Captain Mundy's "Pencil Sketches," which has however undergone the change which Sheridan somewhere says is effected by literary appropriators on their pilfered ideas, "they treat them, as gipsies do stolen children, disfigure them, that they may pass for their own." Here we have the ankle joints so prominent, and placed so high up the legs, as to assume all the appearance of *hocks*—the tail absurdly short, and the under outline of the body perfectly straight, whereas it should descend rapidly from the elbow joint of the fore leg to the knee of the hind one.

QUERIES RESPECTING THE HUMAN RACE, *to be addressed to Travellers and others. Drawn up by a Committee of the British Association for the Advancement of Science, appointed in 1839, and circulated by the Ethnographical Society of London.*

[The Editors have thought this paper of so much importance that they have lost no time in re-printing it, as pointing out to so many residents in India a kind of knowledge which they may so easily acquire and communicate, and which offers so many points of interest to every thinking mind. The more savage races of India from the Veddas of Ceylon to the Goands and the races of the Terraes, with the Singphos and Kariens of our Eastern Frontiers, to say nothing of the Coles, Dhangurs, Sontals and Goemsoor tribes, and many others, all offer fields of research, from which, undoubtedly, many scientific laurels are to be gathered, and eventually much useful knowledge and many humane results may arise.—EDS.]

At the meeting of the British Association held at Birmingham, Dr. Prichard read a paper "On the Extinction of some varieties of the Human Race." He pointed out instances in which this extinction had already taken place to a great extent, and showed that many races now existing are likely, at no distant period, to be annihilated. He pointed out the irretrievable loss which science must sustain, if so large a portion of the human race, counting by tribes instead of individuals, is suffered to perish, before many interesting questions of a psychological, physiological and philological character, as well as many historical facts in relation to them, have been investigated. Whence he argued that science, as well as humanity, is interested in the efforts which are made to rescue them, and to preserve from oblivion many important details connected with them.

At the suggestion of the Natural Historical Section, to which Dr. Prichard's paper was read, the Association voted the sum of £5 to be

expended in printing a set of queries to be addressed to those who may travel or reside in parts of the globe inhabited by the threatened races. A Committee was likewise appointed by the same Section to prepare a list of such questions. The following pages, to which the attention of travellers and others is earnestly invited, have, in consequence, been produced. It is right to observe, that whilst these questions have been in preparation, the Ethnographical Society of Paris has printed a set of questions on the same subject for the use of travellers.* It has been gratifying to perceive the general similarity between the questions proposed by the French savans who compose that Society, and those which had been already prepared by the Committee; but the Committee is bound to acknowledge the assistance which, in the completion of its task, it has derived from the comprehensive character and general arrangement of the Ethnographical Society's list. The following queries might have been considerably extended, and much might have been added to explain the reasons and motives on which some of them are founded. Such additions would, however, have inconveniently extended these pages, and, in part, have defeated their object. The Committee has only further to express its desire that the Association may continue its support to the interesting subject of Ethnography, and that their fellow-members will aid in bringing these queries under the notice of those who may have it in their power to obtain replies. Britain, in her extensive colonial possessions and commerce, and in the number and intelligence of her naval officers, possesses unrivalled facilities for the elucidation of the whole subject; and it would be a stain on her character, as well as a loss to humanity, were she to allow herself to be left behind by other nations in this inquiry.

It will be desirable, before giving direct answers to the questions proposed in the following list, that the traveller should offer, in his own terms, a description of the particular group of human beings, which he may have in view in drawing up his list of answers, seeing that the replies, however accurate and replete with useful information, may fail in some particulars to give a complete idea of the people to whom they relate.

* Reprinted Jour. As. Soc. vol. x. p. 171.

Physical Characters.

1. State the general stature of the people, and confirm this by some actual measurements. Measurement may be applied to absolute height, and also to proportions, to be referred to in subsequent queries. The weight of individuals, when ascertainable, and extreme cases, as well as the average, will be interesting. What may be the relative differences in stature and dimensions, between males and females?

2. Is there any prevailing disproportion between different parts of the body? as, for example, in the size of the head, the deficient or excessive development of upper or lower extremities.

3. What is the prevailing complexion? This should be accurately defined, if possible by illustrative and intelligent example, such as by comparison with those whose colour is well known. The colour of the hair should be stated, and its character, whether fine or coarse, straight, curled, or woolly. The colour and character of the eyes should likewise be described. Is there, independently of want of cleanliness, any perceptible peculiarity of odour?

4. The head is so important as distinctive of race, that particular attention must be paid to it. Is it round or elongated in either direction, and what is the shape of the face, broad, oval, lozenge-shaped, or of any other marked form? It will contribute to facilitate the understanding of other descriptions, to have sketches of several typical specimens. A profile, and also a front view should be given. In the profile, particularly notice the height and angle of the forehead, the situation of the meatus auditorius, and the form of the posterior part of the head. It will also be desirable to depict the external ear, so as to convey the form and proportion of its several parts. The form of the head may be minutely and accurately described by employing the divisions and terms introduced by craniologists, and the corresponding development of moral and intellectual character should in conjunction be faithfully stated. So much of the neck should be given with the profile as to show the setting on of the head. The advance or recession of the chin, and the character of the lips and nose, may likewise be given in profile. The front view should exhibit the width of forehead, temples, and cheek-bones, the direction of the eyes, and the width between them: the dimensions of the mouth. When

skulls can be collected or examined, it would be desirable to give a view in another direction, which may even be done, though with less accuracy, from the living subject. It should be taken by looking down upon the head from above, so as to give an idea of the contour of the forehead, and the width of the skull across from one parietal protuberance to the other.

5. State whether the bones of the skull are thick, thin, heavy, or light. Is it common to find the frontal bone divided by a middle suture or not? Note the form of the outer orbital process, which sometimes forms part of a broad scalene triangle, with the vertex downwards. How are the frontal sinuses developed? Observe whether the ossa triquetra are frequent, or otherwise; whether there be frequent separation of the upper part of the os occipitis; the relative situation of the foramen magnum. In regard to the bones of the face, notice the position of the ossa nasi and unguis; the former sometimes meet nearly or quite on the same plane, whilst, in others, they meet at an angle. The former character is strongly marked in many African skulls. State the form of the jaw-bone, shape of the chin, and observe the angle of the jaw, the position and character of the teeth, and their mode of wear; and if they have any practice of modifying their form or appearance, let this be stated. The malar bones have already been noticed, but they may require a more minute description.

6. When the opportunity can be found, observe the number of lumbar vertebræ, since an additional one is said to be common in some tribes.

7. Give the length of the sternum as compared with the whole trunk; and also some idea of the relative proportion between the chest and the abdomen.

8. What is the character of the pelvis in both sexes, and what is the form of the foot?

9. The form of the scapula will also deserve attention, more especially as regards its breadth and strength; and the strength or weakness of the clavicle should be noticed in connection with it.

10. The internal organs, and blood-vessels will with greater difficulty be subjected to examination; but it may be well here to remark, that varieties in these may prevail locally in connection with race.

N.B.—Peculiarities may exist, which cannot be anticipated in queries, but which the observer will do well to notice amongst his answers to anatomical questions.

11. Where a district obviously possesses two or more varieties of the human race, note the typical characters of each in their most distinct form, and indicate to what known groups or families they may belong: give some idea of the proportion of each, and state the result of their intermixture on physical and moral character. When it can be ascertained, state how long intermixture has existed, and of which the physical characters tend to predominate. It is to be observed, that this question does not so much refer to the numerical strength or political ascendancy of any of the types, but to the greater or less physical resemblance which the offspring may bear to the parents, and what are the characters which they may appear to derive from each: whether there is a marked difference arising from the father or the mother belonging to one of the types in preference to another; also whether the mixed form resulting from such intermarriage is known to possess a permanent character, or after a certain number of generations to incline to one or other of its component types.

12. Any observation connected with these intermarriages, relating to health, longevity, physical and intellectual character, will be particularly interesting, as bringing light on a field hitherto but little systematically investigated. Even when the people appear to be nearly or quite free from intermixture, their habits, in respect of intermarriage within larger or smaller circles, and the corresponding physical characters of the people, will be very interesting.

13. Do the natives speak a language already known to philologists, and if so, state what it is; and notice whether it exhibit any dialectic peculiarities, as well as the modifications of pronunciation and accentuation which it may offer. State also the extent to which this dialect may be used, if limits can be ascertained.

14. If the language be little if at all known, endeavour to obtain a vocabulary as extensive as circumstances will allow, and at least consisting of the numerals, the most common and important substantives*, the pronouns in all persons and numbers, adjectives expressive of the commonest qualities, and, if possible, a few verbs

* The names of mountains, lakes, rivers, islands, &c.

varied in time and person. The vocabulary should be tested by the interrogation of different natives, and more than one person should be engaged in taking it down from their mouths, to avoid, as far as may be, errors arising from peculiarities of utterance or defect of hearing. It is likewise of importance that the system of orthography be duly indicated and strictly adhered to.

15. Endeavour to take down some piece of native composition, such as the ordinary phrases employed in conversation, and any other piece of prose which may be attainable; and specimens of metrical composition if such exist. Though these would be of comparatively little use without translation, yet independently of this some importance is to be attached to the metrical compositions if they have a national character and are widely diffused; and, in this case, it might be possible to express some of their airs in musical character. A specimen of known composition translated into their language, may also be given, such as the first chapter of Genesis, the fifteenth chapter of Luke's Gospel, and the Lord's Prayer.

16. Endeavour to ascertain whether the language is extensively spoken or understood, and whether there are different languages spoken by men having similar physical characters obviously connecting them as a race, or if differing somewhat in this respect, inhabiting a particular geographical tract. When such groups are said to possess different languages, endeavour, as far as possible, to ascertain their number, the sources whence each is derived, and the languages to which it is allied; and also the circumstances, geographical or political, which may account for these distinctions.

[For further information connected with the investigation of languages, reference is made to a short essay on this subject read to the Philological Society of London.]

17. Are there any ceremonies connected with the birth of a child? Is there any difference whether the child be male or female?

18. Does infanticide occur to any considerable extent, and if it does, to what causes is it to be referred, want of affection, deficient subsistence, or superstition?

19. Are children exposed, and from what causes, whether superstition, want of subsistence or other difficulties, or from deformity, general infirmity, or other causes of aversion?

20. What is the practice as to dressing and cradling children, and are there any circumstances connected with it calculated to modify their form; for example, to compress the forehead, as amongst the western Americans; to flatten the occiput, as amongst most Americans, by the flat straight board to which the child is attached; to occasion the lateral distortion of the head, by allowing it to remain too long in one position on the hand of the nurse, as amongst the inhabitants of the South Seas?

21. Are there any methods adopted, by which other parts of the body may be affected, such as the turning in of the toes, as amongst the North Americans; the modification of the whole foot, as amongst the Chinese?

22. How are the children educated, what are they taught, and are any methods adopted to modify their character, such as to implant courage, impatience of control, endurance of pain and privation, or, on the contrary, submission, and to what authorities, cowardice, artifice.

23. Is there any thing remarkable amongst the sports and amusements of children, or in their infantile songs or tales?

24. At what age does puberty take place?

25. What is the ordinary size of families, and are there any large ones?

26. Are births of more than one child common? What is the proportion of the sexes at birth and among adults?

27. Are the children easily reared?

28. Is there any remarkable deficiency or perfection in any of the senses? It is stated, that in some races sight is remarkably keen, both for near and distant objects.

29. To what age do the females continue to bear children? and for what period are they in the habit of suckling them?

30. What is the menstrual period, and what the time of utero-gestation?

31. Are there any ceremonies connected with any particular period of life?

32. Is chastity cultivated, or is it remarkably defective, and are there any classes amongst the people of either sex by whom it is remarkably cultivated, or the reverse, either generally or on particular occasions.

33. Are there any superstitions connected with this subject?
34. What are the ceremonies and practices connected with marriage?
35. Is polygamy permitted and practised, and to what extent?
36. Is divorce tolerated, or frequent?
37. How are widows treated?
38. What is the prevailing food of the people? Is it chiefly animal or vegetable, and whence is it derived in the two kingdoms? Do they trust to what the bounty of nature provides, or have they means of modifying or controlling production, either in the cultivation of vegetables, or the rearing of animals? Describe their modes of cooking, and state the kinds of condiment which may be employed. Do they reject any kinds of aliment from scruple, or an idea of uncleanness? Have they in use any kind of fermented or other form of exhilarating liquor, and, if so, how is it obtained? What number of meals do they make? and what is their capacity for temporary or sustained exertion?
39. Describe the kind of dress worn by the people, and the materials employed in its formation. What are the differences in the usages of the sexes in this respect? Are there special dresses used for great occasions? and, if so, describe these, and their modes of ornament. Does any practice of tattooing, piercing, or otherwise modifying the person for the sake of ornament, prevail amongst the people? N.B. Such modifications not to be blended with other modifications, used as signs of mourning, &c.
40. Have the people any prevailing characteristic or remarkable modes of amusement, such as dances and games exhibiting agility, strength or skill?
41. Are games of chance known to the people, and is there a strong passion for them?
42. Do the people appear to be long or short-lived? If any cases of extreme old age can be ascertained, please to state them. Such cases may sometimes be successfully ascertained by reference to known events, as the previous visits of Europeans to the country. Is there a marked difference between the sexes in respect of longevity?
43. What is the general treatment of the sick? Are they cared for, or neglected? Are any diseases dreaded as contagious, and how

are such treated? Is there any medical treatment adopted? Are there any superstitious or magical practices connected with the treatment of the sick? What are the most prevailing forms of disease, whence derived, and to what extent? Is there any endemic affection, such as goitre, pelagra, plica, or the like? With what circumstances, situations, and habits do they appear to be connected, and to what are they referred by the people themselves?

44. Where there are inferior animals associated with man, do they exhibit any corresponding liability to, or exemption from disease?

45. Do entozoa prevail, and of what kind?

46. What is the method adopted for the disposal of the dead? Is it generally adhered to, or subject to variation?

47. Are any implements, articles of clothing, or food, deposited with the dead?

48. Is there any subsequent visitation of the dead, whether they are disposed of separately, or in conjunction with other bodies?

49. What is the received idea respecting a future state? Does this bear the character of transmigration, invisible existence about their accustomed haunts, or removal to a distant abode?

Buildings and Monuments.

50. What are the kinds of habitations in use among the people? Are they permanent or fixed? Do they consist of a single apartment, or of several? Are the dwellings collected into villages or towns, or are they scattered, and nearly or quite single? If the former, describe any arrangement of them in streets or otherwise which may be employed.

51. Have any monuments been raised by the present inhabitants or their predecessors, and more especially such as relate to religion or war? State their character, materials, and construction. If they are still in use amongst the people, state this object, even if they should be of the simplest construction, and be little more than mounds or tumuli. If these monuments are no longer in use, collect, as far as possible, the ideas and traditions of the natives regarding them, and if possible, have them examined by excavation or otherwise, taking care to deface and disturb them as little as possible.

52. In these researches be on the look out for the remains of the skeletons of man or other animals, and, if discovered, let them be preserved for comparison with those still in existence.

Works of Art.

53. Let works of art, in metal, bone, or other materials, be likewise sought and preserved, and their similarity to, or difference from implements at present in use amongst the people of the district, or elsewhere, be noted.

54. When a people display their ingenuity by the extent or variety of their works of art, it will not only be desirable to describe what these are, but also the materials of which they are constructed, the modes in which these materials are obtained, the preparation which they undergo when any is required, and the instruments by which they are wrought. Such particulars will not only throw light on the character and origin of the people, but will, directly or indirectly, influence the commercial relations which may be profitably entered into when commerce alone is looked to. When colonization is contemplated, the facts contained in the replies to these queries will point out the mutual advantages which might be obtained by preserving, instead of annihilating, the aboriginal population.

Domestic Animals.

Are there any domestic animals in the possession of the people? Of what species are they? Whence do they appear to have been derived, and to what variety do they belong? Have they degenerated or become otherwise modified? To what uses are they applied?

Government and Laws.

55. What is the form of Government? Does it assume a monarchical or democratic character, or does it rest with the priests?

56. Are the chiefs, whether of limited or absolute power, elective or hereditary?

27. Is there any division of clans or castes?

58. What are the privileges enjoyed by or withheld from these?

59. What care is taken to keep them distinct, and with what effect on the physical and moral character of each?

60. What laws exist among the people? How are they preserved? Are they generally known, or confided to the memory of a chosen set of persons? What are their opinions and regulations in reference to property, and especially the occupation and possession of the soil? Does the practice of hiring labourers exist among them?

61. Have they any knowledge or tradition of a legislator, to whom the formation of laws is ascribed?

62. Do they rescind, add to, or modify their laws? and how?

63. Are they careful in the observance of them?

64. What are their modes of enforcing obedience, and of proving and punishing delinquency?

65. How are judges constituted? Do their trials take place at stated periods, and in public?

66. How do they keep prisoners in custody, and treat them?

67. What are the crimes taken cognizance of by the laws? Is there gradation or commutation of punishment?

Geography and Statistics.

68. Briefly state the geographical limits and character of the region inhabited by the people to whom the replies relate.

69. State approximatively the number of inhabitants. As this is an important, but very difficult question, it may not be amiss to point out the modes in which the numbers may be ascertained. The people themselves may state their number with more or less accuracy, but it should be known whether they refer to all ranks and ages, or merely comprehend adult males, who may be mustered for war, or other general purposes requiring their combination. In this case state the apparent proportion between adult males and other members of families. The number of habitations in a particular settlement may be counted, and some idea of the average numbers of a family be given. Where the people inhabit the water-side, the number and dimensions of their craft may be taken, and some idea of the proportion between the number of these and of the individuals belonging to them, may be formed. In drawing conclusions from observations of this kind, it will be necessary to have due regard to the different degrees of density or rarity in which, from various causes, population may be placed.

70. Has the number of inhabitants sensibly varied, and within what period?

71. If it have diminished, state the causes; such as sickness, starvation, war, and emigration. When these causes require explanation, please to give it. If the inhabitants are on the increase, is this the result of the easy and favourable circumstances of the people causing an excess of births over deaths; or is it to be assigned to any cause tending to bring accessions from other quarters? State whether such causes are of long standing, or recent.

72. Is the population generally living in a manner to which they have been long accustomed, or have new relations with other people, and consequently new customs and practices, been introduced?

73. If the people, being uncivilized, have come under the influence of the civilized state, to what people the latter belong, how they are regarded, and what is the kind of influence they are producing.* State the points of their good influence, if any, and those of an opposite character, as the introduction of diseases, vices, wars, want of independence, &c.

74. Is there any tendency to the union of races? how is it exhibited, and to what extent?

Social Relations.

75. What kind of relationship, by written treaty or otherwise, subsists between the nation and other nations, civilized or not? Have they any intercourse by sea with other countries? Do any of them understand any European language? Or are there interpreters, by whom they can communicate with them?

76. Are they peaceable, or addicted to war? Have they any forms of declaring war, or making peace? What is their mode of warfare, either by sea or land? their weapons and strategy? What do they do with the slain, and with prisoners? Have they any mode of commemorating victories by monuments, hieroglyphics, or preservation of individual trophies, and of what kind? Have they any national poems, sagas, or traditions respecting their origin and history? Where Euro-

* This question will comprise the existence of missions—the success or the want of it from causes connected with missionaries themselves or others.

peans have introduced fire-arms, ascertain the modes of warfare which have given place to them.

State whatever particulars respecting their origin and history are derived, either from traditions among themselves or from other sources.

Religion, Superstitions, &c.

77. Are the people addicted to religious observances, or generally regardless of them ?

78. Do they adopt the idea of one great and presiding Spirit, or are they polytheists ?

79. If polytheism exist, what are the names, attributes, and fables connected with their deities, and what are the modes in which devotions is paid to each ? Are any parts of the body held sacred, or the reverse ? Do they offer sacrifices, and are they of an expiatory character, or mere gifts ?

80. Have they any sacred days or periods ? fixed or moveable feasts, or religious ceremonies of any kind, or any form of thanksgiving or other observance connected with seasons ?

81. Have they any order of priests, and if so, are they hereditary, elective, or determined by any particular circumstance ?

82. Is the religion of the people similar to that of any other people, neighbouring or remote ? If different, are they widely so, or dependent on particular modifications, and of what kind ?

83. In what light do they regard the religion and deities of neighbouring tribes ?

84. Is there any idea of an inferior order of spirits and imaginary beings,—such as ghosts, fairies, brownies, and goblins ; and how are they described ?

85. Have they any notions of magic, witchcraft, or second sight ?

86. What ideas are entertained respecting the heavenly bodies ? Have they any distinction of stars, or constellations ? and if so, what names do they give them, and what do these names signify ?

87. Are they in any manner observed with reference to the division of the year, and how ?

88. If time is not divided by observations of those bodies, what other mode is adopted? and do observances connected with them rest with the priests or chiefs?

89. When the traveller, by personal acquaintance with the language, or by means of competent assistance from interpreters, can freely converse with the people, it will be desirable that he should form some idea of their amount of intelligence, their tone of mind with regard to social relations, as respects freedom, independence, or subserviency, and their recognition of moral obligations, and any other psychological character which observation may detect; and more especially such as may contribute to an estimation of the probable results of efforts to develope and improve the character.

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"On the Leiotrichane Birds of the Subhemalayas," by B. H. Hodgson, Esq. : with some additions and annotations,—a Synopsis of the Indian Pari,—and of the Indian Fringillidæ. By E. Blyth, Curator of the Asiatic Society's Museum.

LEIOTRICHANÆ.

Leiothris, Swainson.—Bill short, strong, more or less conic, the culmen and gonys equally curved before the nares, and the tomia scarpt : tip of upper mandible strongly inclined over the lower, with salient notch [?], but not Laniian [or Shrike-like] ; of the lower obtuse, entire, and straight. Nares distinctly fossed, advanced, implumose, lateral ; the aperture more or less lunated by the more or less hardened and scale-like tect. Rictus moderate, furnished with long but feeble bristles : nares also furnished with hairs. Wings short, round, firm, bowed, with five primaries graduated, the sixth and seventh equal and longest. Legs and feet very strong ; tarse a third longer than middle toe and nail, and nearly or quite smooth : toes medial, unequal, depressed, the anterior basally connected, the outer more so and longer ; the hind large and broad, *alone* exceeding the inner digit, and with its nail the outer, but not equal to the central toe and nail. Nails strong, compressed, falcate ; hind largest. Tail short, lyrate, mucronate.

Type *Leiothris furcatus* ? [Swainson, or rather *sinensis*, being the No. 156. No. 72, New Series.

Tanagra sinensis, Gmelin, founded on *la Mesange de Nankin* of Sonnerat, which is referred to *Parus* by Temminck, *p. c.* 287, fig. 1, a figure which is cited by Mr. Swainson, who assigns "India" as the habitat; and deducing his generic diagnosis from the present species, that systematist writes—"Tail moderate, deeply forked," this being a feature unnoticed in Sonnerat's description, which evidently refers to the species under consideration, wherein the form of the tail may be compared to that of a female black Grouse (*Tetrao tetrix*), but having its central pair of feathers a third shorter than the rest.] *L. calipyga*, Mihi [being also *Bahila calipyga*, Hodgson, *Ind. Rev.* 1838, p. 88; subg. *Calipyga*, *Ibid.*, *J. A. S.*, X. 29.] Above and flanks sordid vernal green [or olive-green, tinged with yellow on the crown]; below gamboge-yellow [the belly yellowish white]; outer margin and base of the primaries the same; centrals [i. e. secondaries] edged with sanguine; rest of alars and caudals black. Bill coral-red: legs fleshy-brown. Female with the caudals green like the back, and the central alars not edged with sanguine. Length six inches and a half, the bill five-eighths of an inch; wing two inches and nine-sixteenths; tail two and one-third; tarse to sole an inch and one-sixteenth; central toe and nail three-quarters of an inch; hind-toe five-eighths: weight about 1 oz. *Hab.* central and northern hilly regions [of Nepal]; feeds equally on grass-seeds, and upon insects and their larvæ and pupæ. [The foregoing description of this bird refers to the newly moulted plumage, for as the feathers become old the colours fade very considerably, the green of the upper parts changing to plain grey, the yellow of the throat and breast to a dull buffy hue, and the yellowish tinge of the abdominal region disappears altogether. Analogous losses of colour occur, to a greater or less extent, in the other species, but particularly in the next; and in like manner the bright yellow on the wings of *Garrulus chrysopterus* and certain allied species, fades to whitish-grey, and the *Cissa sinensis* (v. *Kitta venatorius*, Gray), which at first is of a beautiful and deep sea-green, becomes gradually of a pale verditer-blue, while the sanguine hue bordering its large wing-feathers changes to dull leaden-grey; the same being more or less observable in all the various forms (so common on the Himalaya) which have wing-markings of the same general character as those of *Leiothrix*, *Garrulus* (v. *Ianthocincla*), &c.]

SUBGENERA ?

Pringilliparus, Mihi. [*Mesia*, Hodgson, *Ind. Rev.* 1838, p. 34; and since *Philocalys*, H., *J. A. S.*, X. 29.] Bill longer, wings longer [certainly not in proportion, nor even quite so long], not bowed, more acuminate, with but four primaries graduated, the two next being equal and longest. Tail medial, broad, firm, even, with the tips of the feathers nearly squared. [N. B. With several specimens both of this and the preceding type before me, I can perceive no character whatever that should entitle them to separation, and do not even recognise the distinctions of form indicated by Mr. Hodgson, their chief diversity consisting in the shape of the tail, which in the present species is scarcely truncated, and has the outermost feathers a little shorter than the rest.]

Type, *F. argentauris*, Mihi. [*Mesia argentauris*, Hodg., *Ind. Rev.* 1838, p. 88.] Body slaty, paler below, and smeared green above; [in new plumage, tinged with green on the upper parts, the nape dark golden-fulvous, throat and breast bright gamboge having a cast of red, and under-parts deeply tinged with yellow:] cap black, enveloping the silvery ears: [feathers at] base of bill yellow, and the outer margin of primaries and lateral caudals the same: upper and lower tail-coverts and base of wings [i. e. a large patch at the base of the primaries and secondaries,] sanguine: legs and bill pale fleshy-yellow. Female with the tail-coverts yellow [fading to fulvous or tawny]. Length seven inches to seven and a quarter; of bill three-quarters of an inch; wing three and one-sixteenth; tail two and three-quarters to three inches; tarse an inch and one-sixteenth; central toe and nail thirteen-sixteenths; hind-toe ten-sixteenths.

Ioropus, Mihi. [*Siva*, Hodgson, *Ind. Rev.* 1838, p. 88; and since *Hemiparus*, *Ibid*, *J. A. S.*, X. 29.] Bill various, more slender and Meruline, or shorter and more Parian; wings short; feet as in *Zosterops* or *Iora*, with short anteal toes, but tarse high as in the last. Tail more or less elongated, and gradated from sides and centre as in *Parus*; broad, firm, and obtusely tipped, or narrow and frail and wedge-tipped.

Types. *I. strigula*, *cyanouptera*, and *nipalensis*.

I. strigula; [*Siva strigula*, Hodgson, *Ind. Rev.* 1838, p. 89; and figured as *Muscicapa* (*Siva*, Hodg.) *strigula* by M. Adolphe Delessert, in the 2d. or Zoological part of his *Souvenirs d'un Voyage dans l'Inde*, p. 24,

and pl. VIII.*] Length six inches and a half, bill five-eighths of an inch; tail two inches and seven-eighths; wing two and three-quarters; tarse an inch and one-sixteenth; central toe and nail eleven-sixteenths; the hind three-sixteenths. Head with a full crest of sordid gamboge; body above slaty smeared with green; below gamboge more or less di-

* In the same work are figured and described, or only described:—

1. As *Chloropsis curvirostris*, Swainson, ("Menag.," the *Phyllornis Hardwickii*, v. *Chl. Hardwickii*, Jardine and Selby, v. *chrysogaster*, McClelland and Horsfield, v. *cyanopterus*, Hodgson, v. *auriventris*, Guérin, (*Magasin de Zoologie*, 1840, Ois., pl. 17).

2. As *Cypselus* (*Chætura*, Hodgson,) *nudipes*, Hodgson, J. A. S., V. 779, the *Pallene macropterus*, v. *Ch. macroptera*, Swainson, *Zool. Ill.*, v. *leuconotus*, *Mag. de Zool.*, 1840, Ois. pl. 20. (Is this identical with the Australian species—*P. caudacuta*, (Lath.), to which, according to Mr. Strickland (*Ann. and Mag. N. H.* 1843, p. 337), must be referred "*Chætura australis*, Stephens, *Hirundo fusca*, Stephens, and *Ch. macroptera*, Swainson"?)

3. As *Francolinus Hardwickii*, Gray, the *Perdix humilis*, Valenciennes, v. *Fr. nivosus*, *Mag. de Zool.*, 1840, Ois. pl. 18; if indeed this be not also the Cingalese, *Perdix bicalcaratus* of Pennant, which I greatly suspect. The form, to which *P. spadiceus* also belongs, I regard as constituting a very distinct genus—*Galloperdix*, *Nobis*.

4. As *Crateropus Lafresnayii*, Ad. Deless., the *Garrulax cackinnans*, or *Cr. cackinnans*, Jerdon, *Madr. Jl.* 1839, p. 255, with figure; having been, it would appear, also named *Delesserti* by M. de la Fresnaye.

5. As *Cr. griseiceps*, *Rev. Zool.* 1840, p. 101, the *Cr. Delesserti*, Jerdon, *Madr. Jl.* 1839, p. 256.

6. As *Muscicapa rufula*, de la Fresnaye, the *Saxicola nigrorufa*, Jerdon, *Madr. Jl.* 1839, p. 366.

7. As *Pica bottanensis*, Ad. Deless., *Rev. Zool.* 1840, p. 400, the *P. megaloptera*, Blyth, J. A. S., XI, 193 (1842).

And the following new species are given:—

1. *Turdus* (*Merula*) *nigropileus*, de la Fresnaye; a Neilgherry species distinct from *T. simillimus*, Jerdon, and which has since been likewise obtained by that naturalist: allusion being made in the description to the two Himalayan Blackbirds, *T. pacilopterus*, Vig., and *T. collaris*, Sorel, *Rev. Zool.* 1840, p. 2, which latter is doubtless the *T. albocinctus*, Royle, *Ill. Him. Bot.* (1839), termed *albicollis* on that author's plate, which name belongs to another species.

2. *Prinia flaviventris*, (Ad. Deless.,) described as an *Orthotomus*, and previously in *Rev. Zool.* 1840, p. 101.

In the class of mammalia, the Gaour, *Bos gaurus*, v. *Bibos cavifrons*, Hodgson, is figured as *Bibos frontalis*, (Lambert,) which name, however, refers to the Gayal of the trans-Brahmapooter territories, *B. gaurus* of Colebrooke, v. *B. sylhetanus*, F. Cuv., which is a very different animal: and the Wild Dog of the Neilgherries is erroneously referred to *Canis primævus*, Hodgson, which latter I shewed to M. Delessert, and he at once acknowledged their distinctness, as may be likewise seen by comparing M. Delessert's figure with that of the Himalayan animal in *As. Res.* xviii, pt. ii, 236. The only other Indian quadruped figured is a small Neilgherry squirrel, *Sc. Delesserti*, Gervais, which is nearly allied to *Sc. McClellandii* common at Darjeeling, and *Sc. insignis* of Java.—E. B.

lated; alars and caudals black, passing marginally and laterally into yellow; edge of central alars fiery; outer web of tertials blue-grey; chin orange; throat barred black from a black moustache, large and irregular in shape; legs and bill sordid bluish-grey. Sexes alike. Distinguished by its quasi-Parian bill, its crest, and broad composed caudals [also conspicuously by its barred throat]. It passes into the next form or *Proparus*, yet retains the notch on the bill vaguely.

I. cyaneopterus. [*Siva cyaneoptera*, Hodgson, *Ind. Rev.* 1838, p. 88; *Leiothrix lepida*, McClelland and Horsfield, *Proc. Zool. Soc.* 1839, p. 162.] Length six inches and a quarter; bill eleven-sixteenths of an inch; tail two inches and a half; wing two and seven-sixteenths; tarse seven-eighths; central toe and nail ten-sixteenths; hind eight-tenths of an inch. Lutescent-brown, passing to blue-grey towards the head; crown and visible part of closed alars and tail cobalt-blue; tertials and tail tipped white, the outer caudals white internally; legs fleshy; bill dusky yellow; sexes alike. Remarkable for its long, straight, and Thrush-like bill; no crest; tail like the last. [The under-parts are much lighter-coloured than the back, and have a faint lake tinge; rump rufescent; and forehead streaked with black. Inhabits also the hill ranges of Assam.]

I. nipalensis. [*Siva nipalensis*, Hodgson, *Ind. Rev.* 1838, p. 89.] Length five inches and five-eighths to five and seven-eighths; bill five-eighths; tail two inches and a half; wing two and a quarter; tarse fifteen-sixteenths; central toe and nail five-eighths; hind half an inch. Above olivaceous-brown, below [faintly] lutescent; head [cap and nape] slaty, with dull black long superciliary lines; legs and bill sordid fleshy or horn. In form like *strigula* as to bill and crest, but distinguished for its narrow, rounded, and somewhat rigid tail: with it leads to *Proparus*. [This species and the next are also remarkable for the uniform brown colouring of their wings, all the rest having the wings more or less variegated. It likewise inhabits Arracan.]

Siva occipitalis, Blyth. Length about five inches, of wing two and a half, and tail two inches; bill to gape nine-sixteenths, and tarse seven-eighths of an inch. Colour dull brownish olive-green above, the shafts of the dorsal and scapulary feathers pale; below much lighter and rufescent, the throat whitish, the feathers of the fore-neck having dark shafts: crown, nape, and lower tail-coverts, ferruginous-brown, which also tinges

the flanks : coronal feathers considerably elongated ; and the occiput beneath the crest, white : bill black, and legs yellowish-brown. Inhabits Darjeeling.]

Proparus, Mihi. [not *Proparus*, Hodgson, *J. A. S.*, X. p. 29, which refers to the next group, or *Certhiparus*, Hodgson, hodié.] Bill quite Parian and entire, but the nostrils are implumose and furnished with an arched scale. Head crested. Wings short, bowed, with four quills gradated, and the three next longest. Tail narrow and cuneate as in the last. Tarsae elevate and strong. Anteal digits not shortened : hind lengthened, and with its great nail (which is equal to the digit,) much exceeding the laterals, and nearing the middle toe and nail : nails large but moderately curved. [In a second species referred to this division by Mr. Hodgson, but received subsequently to the present paper, *Pr. chrysotis*, H., the tarsae is longer and more slender, and the hind claw less developed, but greatly exceeding the others.]

Type *Pr. vinipectus*, Mihi. [*Siva vinipectus*, Hodgson, *Ind. Rev.* 1838, p. 89.] Length four inches and three-quarters ; bill seven-sixteenths of an inch ; tail under two inches ; wing two inches and one-eighth ; tarsae fifteen-sixteenths ; central toe and nail eleven-sixteenths ; hind ten-sixteenths. Above brown, passing into rusty on the rump and outer webs of the alars next the body, and of the caudals [towards their base], both of which are dusky-black externally, and the primaries have hoary edges. Below albescent, sordid towards the vent ; wine-tinted on the breast ; a white and a black line above each eye. Legs and bill fleshy-brown. Distinguished by its perfectly Parian bill, without trace of notch, and by its longer but less falcate nails.

[*Pr. chrysotis*, Hodgson. Partakes of the aspect of *Orites* (*Parus*, L.) *caudatus*. Upper parts and throat ash-grey, tinged with yellow on the rump ; ear-coverts silvery, with a faint lutescent cast ; under-parts bright yellow ; a longitudinal streak of rich orange-yellow on the wing, formed by the margins of the secondaries ; and the outer and graduated primaries narrowly edged with yellow ; inner edge of the tertiaries margined with white, and secondaries having a white spot at tip ; bill dusky-plumbeous ; and legs pale. Length about four inches and a half ; of wing two inches ; and the middle tail-feathers the same ; tail much graduated : bill to gape barely half an inch ; tarsae thirteen-sixteenths ; hind toe and claw nine-sixteenths].

Certhiparus, Mihi. [Olim *Minla*, Hodgson, *Ind. Rev.* 1838, p. 42; changed to *Proparus*, H., *J. A. S.*, X. 29, which latter name is now transferred to the preceding group.] Bill somewhat lengthened, slender, and inclining to arch, but the tip of the upper mandible strongly notched; base depressed; rictus moderate and nearly smooth. Nares large, advanced, tenuirostral; the aperture lunately lineated by a large and soft incumbent membrane; tongue simple, forked. Wings round, acuminate; fifth longest, the first and second much, the third and fourth less, gradated. Tail medial or short, and round with ovoid tips, the webs of which are open and harsh. Tarse equal only to mid-toe and nail: toes medial, compressed, very unequal, and basally much connected; the hind very large and alone exceeding the outer fore, but not broad, nor its nail so long as the digit: nails much curved and compressed.

Types *ignitinctus* and *castaniceps*, Mihi.

C. ignitinctus. [*Minla ignitincta*, Hodgson, *Ind. Rev.* 1838, p. 32; *Leiothrix ornata*, McClelland and Horsfield, *Proc. Zool. Soc.* 1839, p. 162.] Head and neck black and white in broad alternate masses; the crown, and a line through the eye from the bill, black; and a broad superciliary space, with the throat, white: mantle luteous-olive merged [in the male?] in vinous across the upper back: body below yellow [or yellowish:] alars and caudals black; prime alars and caudals margined and tipped crimson; the rest white-edged: legs horn-yellow; bill black above, horn below. Female less in size and duller-hued. Length five inches and a quarter; bill ten-sixteenths of an inch; tail two inches and a quarter; wing two and five-eighths; tarse thirteen-sixteenths; central toe and nail three-fourths of an inch; hind ten-sixteenths. [Occurs also in Assam.]

C. castaniceps. [*Minla castaniceps*, Hodgson, *Ind. Rev.* 1838, p. 33.] Above olive, with a bright chestnut cap streaked with white; below lutescent: ears and moustache black; centre of alars margined with rusty; outer primaries with hoary: legs fleshy; bill dusky-horn. Length five inches; bill nine-sixteenths of an inch: tail an inch and thirteen-sixteenths; the wing two and a quarter; tarse seven-eighths of an inch; central toe and nail eight-sixteenths, the hind nine-sixteenths of an inch. Somewhat deviates by its straighter bill and shorter narrower tail with wedged tips, but has the *quasi*-Certhian feet with large compressed

thumb exceeding the outer fore, and *with its nail* nearing the central. [It is by no means nearly allied to the preceding species.]

The curious will find all these birds carefully described, long ago, in the 'India Journal of Science'; but the subject is worth recurring to, and is attempted to be treated now so as to shew more accurately the curious gradation of form. In this rich accession to the *Leiotrichane* of Swainson, we have great means of illustrating that family, which seems to be a singular combination of *Parus* with the long-legged Finches on the one hand, and the Certhians on the other. The structure and habits, on the whole, are nearer to *Parus*, into which genus our *visipectus* passes almost absolutely. Others remind us by their short toes of *Iora*, *Zosterops*, and the clinging *Brachypodans*; while the Certhian structure is represented very fully in the bill and feet of *ignitinctus*, and less palpably yet distinctly so in its tail; and the tails of *visipectus* aforesaid, as well as of *nipalensis*, are of the scansorial model.

Leiothrix as a genus may embrace the whole; but I think the quasi-Finch—*argenteus*, the quasi-Ioran or short-toed, and the quasi-Certhian,—forms, deserve at least subgeneric separation. Indeed how could one define them in a single genus? All these birds are foresters, and more or less gregarious: their food consists almost equally of hard grass-seeds and small grains (wherein they resemble the Finches), and of hard and soft, perfect and imperfect, insects (wherein they agree with *Parus*;) and the character of the stomach and intestines is of a mixt type, between the typical Finches and the Tits.

They creep and climb among foliage and large flowers, and the Finch-like ones perch on the standing stalks of large grasses and small grains, just like the Carduelines. These (*Philocalys*) are the greatest seed-eaters, and the *Certhipari* the least so, the latter being admirable climbers. They make half pensile semi-globular nests, well compacted, and placed at a moderate height on umbrageous trees or large shrubs in the forests, and are all confined to the northern and central hilly regions [of Nepal], being very rare in the southern hilly region, and wholly unknown to the plains. The thick-billed Finches and Tits have

* The true *Pari* devour oleaginous seeds with avidity; piercing a hole, for example, in the husk of a hemp-seed, and thus extracting the kernel: and I have remarked that *P. ater* and *P. palustris* of Europe are very partial to sunflower-seeds.—E. B.

mostly the same location; but some of both of these are found in the lower hills and plains, especially of the Finches, as the *Tooti* or Rosy Finch [*Erythrospiza erythrina*], which, by the way, seems to me a distinct type leading from *Pyrrhula* to *Linota*.* The *Gandums* or Buntings are likewise found in the plains; though there the European [forms of] Finches are properly represented by the Weavers, and the Amadines,—the *Bayas* [*Ploceus*, v. *Euplectes*, Sw.], *Lauls* [*Estrela amandava*], *Moonias* [*Amadina*, v. *Lonchura*, Sykes, v. *Munia*, Hodgson], &c. of Indian speech.

Emberizæ are commonly hill birds, and *Pari* almost, or quite, exclusively so. I have four species of the former and twelve of the latter genus!

May, 1843.

P. S.—Adopting Swainson's views, one might justify the above division of our Leiotrichane birds by shewing that they form a circle analogous to the various tribes of the *Insessores*, thus:—

Tribes of <i>Insess.</i>	Analogical characters.	Genera and subg. of <i>Leiotrichanæ</i> .
<i>Conirostres</i> .	{ Wings and feet perfect. Food various.	{ <i>Fringilliparus</i> . [<i>Mesia</i> .]
<i>Dentirostres</i> .	{ Wings rounded. Insects chiefly.	{ <i>Leiothrix</i> . [olim <i>Bahila</i> , H.]
<i>Fissirostres</i> .	Feet imperfect.	<i>Hemiparus</i> . [<i>Siva</i> .]
<i>Tenuirostres</i> .	{ Bill slender, curved, large soft nares.	{ <i>Certhiparus</i> . [<i>Minla</i> .]
<i>Rasores</i> , or <i>Scansores</i> .	{ Bill entire, short; tail rigid; hallux enlarged.	{ <i>Proparus</i> .

At least it will be allowed to be pretty evident that *Certhiparus* is the analogue of *Mniotilta*, and *Hemiparus* of *Zosterops*; but as Swainson has made these respectively the scansorial and suctorial types, the above distribution is probably in fault, and in fact is but a hasty glance of the subject in *this* view, which is purely theoretical and perhaps unsound. [The decidedly Leiotrichane genus *Pteruthius* is here omitted altogether, though composed of two Himalayan and Nepalese species, viz. *Pt. rufiventer*, nobis, *J. A. S.* XI, 183, and XII, 854, and *Pt. erythropterus*, v. *Lanius erythropterus*, Vigors, and of Gould's 'Century,' noticed also in XI, 183.]

* This bird is perfectly true to the form of the American Purple Finch of Wilson, which is the type of *Erythrospiza*, Bonap.: the group consisting of *Linnets* with tumid bills, in which respect alone they appear to me to approximate to the Bullfinches.—E. B.

The *Leiothrix signata*, McClelland and Horsfield, *Proc. Zool. Soc.* 1839, p. 162, is identical with *Siphya auricularis*, (Hodg.) Blyth, *J. A. S.* XII, 940, and must accordingly now range as *S. signata*.

Another Himalayan bird referred to the *Leiotrichanæ* by Mr. G. R. Gray, in the 2d edition of his 'List of the genera of Birds' (p. 45), is *Sylviparus modestus*, Burton, *Proc. Zool. Soc.* 1835, p. 154;* but I suspect the identity of this with a species sent as a *Parus* by Mr. Hodgson, and which does not appear to me to differ in any marked degree from *Parus*, further than in its style of colouring, and in having a shorter tail. The generic diagnosis supplied by Mr. Burton accords with the species in question, except that the expression "*rostrum brevissimum*" conveys the idea of a still shorter bill than occurs in the bird before me, of which I draw up the following description:—

Sylviparus modestus (?), Burton, *loc. cit.*; *Parus seriophrys*, Hodgson, MS. Length about three inches and five-eighths, of which the tail measures an inch and three-eighths; wing two inches and one-eighth; bill to gape three-eighths; tarse nine-sixteenths of an inch. (*S. modestus* is stated to measure four inches, of which the tail occupies an inch and a quarter; and tarse half an inch.) Colour that of the *Phylloscopus* group, or olive-green above, paler and dingy below; the base of the primaries externally edged with yellowish-white: head distinctly crested. Nepal.

Of the remaining eleven species of *Parus* alluded to by Mr. Hodgson, four are figured in Gould's 'Century of Himalayan Birds,' viz.

P. monticolus, Vigors, *P. Z. S.* 1831, p. 22.

„ *xanthogenys*, *Ibid*, p. 23.

„ *melanolophus*, *Ibid*.

„ *erythrocephalus*, *Ibid*.

* Other species described at the same time were *Athene* (v. *Noctua*) *Brodiei* = *At. tubiger*, (Hodgson,) *As. Res.* XIX, 175, and *J. A. S.* XI, 163; *Phænicurus* *McGregorii* = *Niltava fuligiventer*, H., *Ind. Rev.* 1837, p. 650; *Sylvia* ? *castaneo-coronata* = *Tesia flaviventer*, H., *J. A. S.* 1837, p. 101; *Sylvia* *Burkii* = *Culicipeta Burkii*, *Nobis*, *J. A. S.* xii, 968, v. *Muscicapa bilineata*, Lesson, v. *Cryptolopha auricapilla*, Sw. (*Menag.*); *Ægialus flammiceps*, probably a *Stachyris*, *J. A. S.* XIII, 379; and *Picumnus innominatus* = *Vivia nipalensis*, H., *J. A. S.* VI, 107, and XII, 1005. To *Tesia cyaniventer*, H., must be referred *Saxicola* ? *olivea*, McClelland and Horsfield, *Proc. Zool. Soc.* 1839, p. 161; and there is an Abyssinian species of this group figured as *Troglodytes micurus*, by Ruppell.

Others are described by Mr. Hodgson in the 'India Review' for 1838, p. 37 : viz.

P. atriceps, Horsfield, v. *P. nipalensis*, H., which, with *P. santhogenys* and *P. melanolophus*, extends into the hill regions of Southern India, the present species likewise occurring in the Malay countries.

P. sultaneus, Hodgson, v. *Melanochlora flavocristata* and *M. sumatrana*, Lesson and La Fresnaye, vide *J. A. S.* XII. 955 : a remarkable species which also extends into the Malay countries.

And the following may now be added :—

P. dichrous, Hodgson. Length about five inches ; of wing two and a quarter, and tail an inch and seven-eighths ; bill to forehead under three-eighths of an inch ; tarse three-quarters of an inch. Upper-parts uniform brownish-grey, the occiput adorned with a slightly recurved crest of unpointed feathers, nearly an inch long ; entire under-parts dull rufescent-brown, the forehead and cheeks tinged with the same : bill dusky ; and feet lead-coloured. Nepal.

P. amodius, Hodgson. Very closely allied to *P. ater*, but the bill decidedly more slender and compressed ; the black also descends more upon the breast, and spreads laterally, circumscribing the sides of the neck ; and the back is less tinged with olivaceous, while the belly would appear to be more rufescent, than in its European representative. Nepal.

P. iouschistos, Hodgson. Length about four inches and a quarter, of which the tail measures two inches, and has its outer three feathers graduated, and the middle pair a quarter of an inch shorter than the next ; wing two inches and one-eighth ; bill to forehead, through the feathers, three-eighths of an inch ; tarse five-eighths. Colour ashy above, tinged with olive, the winglet and coverts of the primaries black ; a very broad black streak over each eye (as in *Orites caudatus*), and the central line of the head, with the sides of the head and entire under-parts, clear reddish-isabelline ; graduated outer tail-feathers more or less tipped and edged externally with whitish : bill black ; and feet pale brown. Nepal.

The last species, with *P. erythrocephalus*, should perhaps be rather arranged in *Orites* vel *Mecistura*, but *P. iouschistos* has a longer and more *Parus*-like bill, and both serve to connect *Orites* with *Parus* by an easy gradation. The European *Orites caudatus* differs much in habit from the true *Pari*, being exclusively insectivorous, and also never placing its foot upon its food while picking it to pieces with the bill in the

Jay-like or Crow-like manner continually resorted to by the true *Pari*; and it is likewise celebrated for its beautifully constructed large domed nest, which is placed in a forked branch, whereas the *Pari* nidificate in holes and cavities: but I remember M. Audubon telling me, that he had discovered some cases of intermediate habit even in this particular, one or two North American species constructing a regular domed nest with inside a suitable cavity in a tree; and the same is not unlikely to be the case with these two Himalayan species.

The above ten species of Himalayan *Pari* (apud Hodgson,) are all which I am acquainted with at present; but there is a "*P. (?) minus-tus*," Jerdon, of Southern India, described by the latter naturalist, which appears to have the plumage of *Sylviparus*, but of which "the bill is larger, and less robust, than in the Tits, in general approaching that of *Ægithalus*." *Madras Journal*, XI, 8. (*Non vidi*.)

I was next about to endeavour to indicate Mr. Hodgson's four *Emberizæ*; but as I dislike giving isolated notices, I will venture to offer a general

SYNOPSIS OF INDIAN FRINGILLIDÆ,—

Which will afford the opportunity of making known several new species discovered by Mr. Hodgson, and be far more acceptable to the Ornithologist than an indiscriminate medley of previously undescribed species.

To begin with the genus *Ploceus* (v. *Euplectes*, Sw.), three species of which are common in Bengal and respectively more or less so in other parts of India.

1. *Pl. philippinus* (?); thus marked with doubt because there is reason to suspect its distinctness from its representative in the Philippine Islands, or *Loxia philippina*, Lin., founded on the *Grosbec des Philippines* of Brisson, or *Toucnam-courvi* of Buffon (*Ois.* III, 462): the latter author refers to Brisson for a description of the male; but in his notice of the *Baglasecht* of Abyssinia (*Pl. baglasecht*, Vieillot, *Loxia philippina*, var, Lath.), he alludes to a black spot on each side of the head of the Philippine species, which certainly does not apply to the

Indian bird under consideration (some notice of which occurs in *J. A. S.* XI, 872). *Pl. philippinus* is included among the birds of Sumatra by Sir S. Raffles, and among those of Java by Dr. Horsfield; but in a recent communication Mr. H. E. Strickland informs me, that “the *Fringilla philippina* of Dr. Horsfield’s catalogue is not the true *philippina*, but I have not yet decided,” he adds, “what it is.” Hence I suspect that the Javanese bird will prove to be the original *philippina*, rather than the allied Indian species, which latter has always been so designated, and is probably thus alluded to by Mr. Strickland as the “true *philippina*.” Should it require a name, it might be termed *Pl. baya*. It extends its range throughout India, and is the only species of the genus which Mr. Hodgson has forwarded from Nepal.*

2. *Pl. manyar*; *Fringilla manyar*, Horsf., *Lin. Tr.* XIII, 160, apud Strickland in *epistola*: *Euplectes flaviceps*, Swainson, *Menag.*, and probably *Ploceus flaviceps*, Cuv., *Par. Mus.*, as mentioned in Lesson’s *Traité*; (nec *Pl. flaviceps*, Sw., which now ranks as *Hyphantornis stictonotus*, (A. Smith) G. R. Gray;) *Euplectes striatus*, Nobis, *J. A. S.* XI, 873, and XII, 181 (*bis*); and probably *Coccothraustes chrysocephala*, Vieillot, which is referred to the next species in the *Dict. Class. W.* India, Bengal, Assam and Malay countries. Constructs a non-pensile nest among reeds, with an incipient tubular entrance; as I am informed is also very commonly the case with the preceding species, when resorting to similar localities.

3. *Pl. bengalensis*; *Loxia bengalensis*, Lin. (founded on the *Yellow-headed Indian Sparrow* of Edwards): *L. regina*, Bodd.; *Euplectes albirostris*, Sw. *Menang.*—Bengal; less common in S. India.

Next to the Baya or Weaver group (so largely developed in Africa) may be arranged the Sparrows:—

* A letter just received from Mr. Strickland informs me, that—“Horsfield’s so called *Pl. philippinus* from Java, is bright yellowish above, back striped with dusky; wings dusky, each feather margined whitish; tail dusky, narrowly tipped with whitish. Beak shorter than in *bengalensis*, the cheeks and throat blackish with a yellow streak dividing that on the lower jaw. Lower parts deep yellow. No doubt a well known species, though I cannot at the moment give the right name.”

1. *Passer domesticus* (?), Lin. ; *P. indicus*, Jardine and Selby, *Ill. Orn.*, 1st. series, pl. CXVIII. I have had no opportunity of comparing European and Indian specimens of the common Sparrow of the respective regions ; but it has always seemed to me, judging from recollection, that the upper parts of the male are somewhat redder, the under parts whiter, and that the females are decidedly paler altogether, in the Indian than in the British Sparrow : but the Indian bird certainly is not " smaller in all its proportions," as stated by Messrs. Jardine and Selby ; nor are the upper parts of the male nearly so red as represented in their plate. The common Sparrow of India is generally distributed over the country, even in the hottest districts ; and Mr. Crawford notices its abundance in the capital of Siam ; with " more than its European familiarity. In proceeding towards the equator," he adds, " it appears here for the last time, not to my knowledge being found in any Asiatic country to the south of Siam, except in a few spots where it has been introduced by Europeans." ('Embassy to Siam and Cochin China,' p. 432.)

2. *P. pyrrhonotus*, Nobis, *n. s.* Closely resembles the last in plumage, but is readily distinguished by its inferior size, its conspicuously smaller bill and feet, and by having the rump feathers dull maroon, instead of greyish-olive. Length about four inches and three-quarters, of wing two and five-eighths, and tail two and one-eighth ; bill to forehead five-sixteenths, and to gape seven-sixteenths of an inch ; tarse barely five-eighths, middle toe and claw five-eighths. Obtained, together with the preceding, at Buhawalpore, in Scinde, by the late Sir Alexander Burnes. The female I have not seen.

3. *P. flaveolus*, Nobis, *n. s.* With a close resemblance in its markings to the common Sparrow, except that the back is not streaked, this pretty species is distinguished by its smaller size and predominating yellowish plumage. The bill somewhat inclines to be slender, and in this respect, as well as in the absence of all streakiness above, some approach is shewn to *Gymnoris flavicollis*. In the male, the top of the head, nape, and rump, are of a dull light green, inclining to yellowish on the forehead ; the cheeks and sides of the forehead are tolerably bright yellow, and the rest of the under parts are sullied yellow : streak from eye to mouth, and the usual patch on the throat and fore-neck,

deep black : sinciput, mantle, and anterior third of wing, chesnut-bay, passing to maronne at the bend of the wing : there is a whitish bar on the wing, formed by the tips of the smaller range of coverts ; and the rest of the wing, with the tail, is dusky, the feathers margined with yellowish-brown. Bill black (in the breeding season) ; and legs brown. The female is nearly uniform pale brown above, darker on the mantle, and having the whitish bar on the wing somewhat narrower ; supercilium, cheeks, and under parts, dull yellowish ; and bill light brown. Length five inches, or nearly so ; of wing two and three-quarters, and tail two inches : bill to forehead seven-sixteenths, and tarse five-eighths. From Arracan, where procured by Capt. Phayre.

4. *P. pyrrhopterus* ; *Fringilla pyrrhoptera*, Lesson, *Zoologie du Voy. de M. Belanger*, p. 271. (*Non vidi.*) " Size of the common Sparrow. Head and neck spotless rufous-brown ; the mantle bright rufous, with black central streaks to the feathers ; shoulder deep maronne, bordered by a small oblique white line ; the middle wing-coverts black, edged with rufous and maronne, and the rest of the wing pale ashy externally, and brownish on the inner barbs of the feathers : under parts rufous-grey, the throat reddish-grey, with a black patch commencing on the lower part of the neck : bill and tarse yellowish [but the former doubtless black during the breeding season as in the other species]. Female grey-brown, above silky, with brown central streaks to the feathers of the mantle ; below of a blonde-grey throughout : wings ash-grey with a white ray on the shoulder, but no maronne." Described to inhabit the Coromandel coast, and especially the neighbourhood of Pondicherry ; but the species has not been obtained by Mr. Jerdon.

5. *P. cinnamomeus* ; *Pyrgita cinnamomea*, Gould, *Proc. Zool. Soc.* 1835, p. 85, and noticed in *J. A. S.* XI, 108. Inhabits the Upper Provinces of Hindoostan.

6. *P. montanus* ; *Fringilla montana*, Lin. This British species is common in the Himalaya, and extends eastward to China and Japan : it takes the place of the common Sparrow in Chusan. But a more unexpected locality for this bird to inhabit, is the island of Ramree, Arracan, whence fine specimens have been forwarded to the Society by Capt. Abbott. This Sparrow is remarkable for the female and young resembling the adult male in plumage, all being clad in a dress analogous in colouring to that of the adult males only, of the other species.

7. *P. (?) concolor*, Jerdon, *Madr. Journ.* XI, 28: perhaps *Emberiza olivacea*, Tickell, *J. A. S.* II. 578, which specific name would have the priority. (*Non vidi.*) According to Mr. Jerdon, this bird "does not exactly agree with the characters of *Pyrgita* [*i. e. Passer*], having the bill more turgid, and with the commissure slightly sinuated. The third quill is shorter than the two first, and the inner toe is shorter than the outer one; its claws moreover are less curved. Colour uniform light ash-brown above, still paler below (indeed almost white at chin and vent), and darkish on the quills and tail. Length six inches; wing three inches and three-eighths; tail two and a quarter: tarse rather more than seven-tenths; bill at front four-tenths. Irides brown: bill brown above, yellowish below; legs flesh-coloured yellow." The only specimen obtained by Mr. Jerdon was shot on the ground in an open plain, along with a lot of the *Coryphidea baghaira*, p. 961 Hab. S. India.

Gymnoris, Hodgson, *n. g.* Differs from *Passer* in having the beak more elongated, slender, and *Carduelis*-like; it being more slender than in restricted *Fringilla*.

G. flavicollis; *Fringilla flavicollis*, Franklin, *P. Z. S.* 1831, p. 120; referred to *Ploceus* by Col. Sykes, *P. Z. S.* 1832, p. 94, and with more propriety to *Pyrgita* vel *Passer* by Mr. Jerdon.* India generally, though

* Mr. Strickland remarks, in his recent letter to me, "I consider *Fringilla flavicollis* to be a true *Passer*. It is one of the many instances, among the *Fringillidæ*, of the variable amount of development of the beak in the same genus. Its style of plumage is completely that of *Passer*, and the yellow spot on the throat resembles that of *Fringilla petronia* which I also consider a *Passer*. *Fringilla flavicollis* is certainly not a *Plocepasser*, wanting the spurious quill found in all the *Ploceinæ*; still less is it a *Ploceus*." To this may be added that its nest and eggs, as described in Mr. Jerdon's catalogue, are quite those of *Passer*, the former being widely different from that of *Plocepasser*. Mr. G. R. Gray, however, in his illustrated work on the genera of birds, now in course of publication, includes this bird among the species of *Ploceus*, following Col. Sykes, and he also refers to *Ploceus* the *Fringilla erythrocephalus*, Gm., which is decidedly a *Hyphantornis*, G. R. Gray (v. *Ploceus* apud Swainson); there is some considerable difference between the beaks of either of these species and that of *Pl. capensis*, which deviates in the opposite manner from the type of *Ploceus*: still I agree with Mr. Strickland in his appreciation of the systematic value of various strongly marked modifications of the beak, observable in several natural divisions among the *Fringillidæ*, and indeed have expressed my opinion on the subject in the course of the present paper. Had Mr. Hodgson not separated *Gymnoris* from *Passer* as above, I should scarcely have myself ventured upon doing so.

I have not hitherto met with it in Lower Bengal. Mr. Hodgson obtained it in Nepal, and Sir A. Burnes in Scinde.

I next pass to, the Mooniahs,—*Amadina*, Swainson, v. *Lonchura*, Sykes, v. *Loxigilla* (in part), Lesson, v. *Munia*, Hodgson; *Spermestes*, Swainson, apud Jerdon.

1. *A. malacca*; *Loxia malacca*, Lin.: *Munia rubronigra*, Hodgson, *As. Res.* XIX, 153; *Lonchura melanocephala*, Horsfield, *P. Z. S.* 1839, p. 163. Common throughout the country.

2. *A. maja*; *Loxia maja*, (nec *Fringilla maja*,) Lin.; *Malacca Grosbeak*, Edwards. I include this species on the authority of Mr. Frith, who assures me that he has now and then observed it in different parts of Bengal, but not commonly, nor in large flocks like the others, two or three only having been seen by him together. It is common in the Malay countries.

3. *A. pectoralis*, Jerdon, *MS.*; *Spermestes*, No. 103 (*bis*), *Madr. Journ.* No. XXX, p. 171. South of India.

4. *A. acuticauda*; *Munia acuticauda*, Hodgson, *As. Res.* XIX, 153. Nepal.

5. *A. striata*; *Loxia striata*, Latham: *Fringilla leuconota*, Tem. Indian peninsula; Arracan.

6. *A. punctularia*; *Loxia punctularia*, Lin.: *Fringilla nisorica*, Tem.; *Munia lineoventer*, Hodgson, *As. Res.* XIX, 154. Common throughout the country.

7. *A. malabarica*; *Loxia malabarica*, Lin.: *Lonchura cheet*, Sykes, *P. Z. S.* 1832, p. 95; *Loxia bicolor*, Tickell, *J. A. S.* II, 578. Also generally diffused.

Estrela, Swainson; *Loxigilla* (in part), Lesson: The Waxbills. Of this extensive genus, I know only of two Indian species, which are by no means closely allied.

1. *E. amandava*; *Fringilla amandava*, Lin.: *F. punicea*, Horsf., *Lin. Trans.* XIII, 160. Occurs in enormous flocks in many parts of the country.

2. *E. formosa*; *Fringilla formosa*, Lath. Central India.

The foregoing three groups, — of Weaver-finches, — of Sparrows, — and of Mooniahs, Amaduvats and Waxbills, — are very distinct from any of the following genera, and appear to me to range most naturally

in the order in which I have placed them.* We now come to the more typical Finches, which have endless mutual affinities, and are most difficult to arrange in anything like a satisfactory series.

Coccothraustes, Brisson. Grosbeaks. The three Himalayan species are remarkable for their black and yellow plumage, in which respect, and perhaps others, they approximate the *C. vespertinus* of North America. Each of them, however, presents peculiarities in the modification of the beak, and each likewise differs in the character of plumage proper to the female sex.

1. *C. melanocephalus*, Hodgson, *As. Res.* XIX, 150: male figured in Mr. G. R. Gray's illustrated work on the genera of birds, but the beak made to appear too much elongated, the colour of the upper parts too black, and the tail too much truncated. As compared with the European *C. vulgaris*, the beak is not longer, but is much broader, and more bulged (or *Pyrrhuloxia*), and the basal denticulation of the upper mandible is strongly developed. It is probably the largest Finch in existence.

2. *C. carnipes*, Hodgson, *As. Res.* XIX. 151. The beak of this fine species approaches to the *Pyrenestes* form, being much less bulged than in the preceding, and a good deal compressed towards the tip; the basal denticulation very decided.

3. *C. icteroides*, Vigors, *P. Z. S.* 1831, p. 8; Gould's 'Century', pl. XLV. Beak more elongated than in the others, or rather more drawn out towards the tip; and approaching most nearly in form to that of *C. vulgaris*. This species would seem to be allied to the Chinese *C. melanura*.

Hematospiza, Nobis, *n. g.* Bill nearly as in *Guiraca*, Sw., or *Pyrr.*

* Mr. Strickland remarks, in *epistola*,—"An excellent distinction between the *Ploceinae* and *Fringillinae* was pointed out by Swainson, viz. the spurious quill in the former, wanting in the latter. On this ground I refer all the *Amadinae* tribe (which possess this quill) to the *Ploceinae*." The character here mentioned would retain the Sparrows with the *Fringillinae*, and it seems to hold good throughout the two groups: but the *Alaudinae* vary in this respect, as the spurious quill occurs in *Mirafra*, in *Pyrrhuloxia*, and also in *Cathilanda*, while it is absent in all or most of the rest. I cannot, however, quite agree with Mr. Strickland in referring the *Amadinae* series to the *Ploceinae* as a major division, but would retain it as a distinct and corresponding supergeneric group; and I much incline to the same opinion, as regards the separation of both the Sparrows and the Buntings from the *Fringillinae*.

rhinops in form, but more elongated, the tip of the upper mandible curving distinctly downward over the lower, with a minute but distinct notch at the bend : wings as in *Corythus*, reaching to the middle of the rather short tail : feet adapted for arboreal habits.

H. beetonensis ; *Loria beetonensis*, Lath. :* *L. indica*, Gm., nec Lath. : *Corythus sepihi*, Hodgson, *As. Res.* XIX, 151. Himalaya. Examples of this brilliant species are now and then brought for sale to Calcutta. I suspect that it is allied in form to *Gviraca ludoviciana*.

Pyrrhula, (Antiq.) Mæhring. The Bullfinches.

1. *P. nipalensis*, Hodgson, *As. Res.* XIX, 155. Himalaya.

2. *P. erythrocephalus*, Vigors, *P. Z. S.* 1831, 174 ; Gould's 'Century,' pl. XXXII. Himalaya.

Pyrrhuloides, Nobis, *n. g.* This curious form connects the *Pyrrhula* line with the Bunting form of bill, and presents some appearance of an affinity with the *Ploceus* group. As viewed from above, the beak is bulged as in *Pyrrhula*, but not quite so short and broad ; and the lateral aspect is that of a stout *Emberiza* bill, having the tomæ of the mandibles much inflected, and the upper one similarly scooped, while the lower is proportionably thickened : the tip of the upper a little overhangs that of the lower mandible : nostrils basal, and concealed by short reflected plumes. Wings of mean length, having the second, third, and fourth primaries subequal and longest. Tarsæ as long as the middle toe, the feet formed for perching, the two lateral toes nearly equal, and the claws moderate, the anterior somewhat straight.

P. epauletta ; *Pyrrhula epauletta*, Hodgson, *As. Res.* XIX, 156. Of this species I took the following description from specimens taken to England by Mr. Hodgson. Male wholly brownish-black, excepting an orange or golden-saffron patch occupying the posterior half of the crown with the occiput, and the axillary plumes under the wing which are similarly coloured. Female spotless reddish-brown, brightest on the belly and flanks, greater wing-coverts, and tertiaries ; the forehead and neck grey ; coronal patch, with the ear-coverts, dull greenish-saffron ; axillaries as in the male ; primaries and tail dusky ; and the inner webs of the uppermost tertiaries are more or less white, a trace of which also occurs in the male. Bill of both dusky-horny, and feet

* Probably meant for *boutanensis*, or *bottanensis* as more elegantly rendered.

brown. Length about five inches and three-quarters, of wing three inches, and tail two and a quarter; bill to forehead seven-sixteenths of an inch, and tarse eleven-sixteenths. Himalaya, and I believe rather uncommon.

Propyrrhula, Hodgson, MS. This connecting form has the beak of a true *Pyrrhula*, though not quite so short as in *P. vulgaris* and *P. erythrocephalus*; while the plumage and colouring ally it to *Corythus* and *Erythrospiza*, the former being, however, a degree less firm, wherein it approximates the true *Pyrrhula*. It can only be arranged satisfactorily as a separate division.

P. subhemachalana; *Corythus subhemachalus*, Hodgson, As. Res. XIX, 152. Himalaya.

From *Propyrrhula* the genus *Erythrospiza* would conduct us by an easy gradation to the Linnets and allied forms; but the remarkable genus *Corythus* branches off from the present group, and leads us direct to the very curious group of Crossbills, *Losia*, of which *L. curvirostra* occurs in Afghanistan, and the following new species in Nepal:—

L. himalayensis, Hodgson, MS. Distinguished from *L. curvirostra* by its very inferior size, being smaller than *L. leucoptera*; the bill also is as slender as in *Carduelis*, but deeper in conformity with the generic characters of the Crossbills. Length about five inches and a half, of wing three to three and a quarter, and tail two inches; bill (in a straight line) half an inch. Plumage as in *L. curvirostra* and *L. pytiopsittacus*.

Erythrospiza, Bonap.; *Hæmorrhous*, Swainson. The birds of this division are essentially Linnets with more or less tumid bills.

1. *E. erythrina*, (Pallas): *Coccothraustes rosea*, apud Vieillot; described as "*E. rosea*?" in J. A. S. XI, 461. India generally, being the only representative of the present great series of northern Finches upon the plains of India.

2. *E. rodopepla*; *Fringilla rodopepla*, Vigors, P. Z. S. 1831, p. 23; male figured in Gould's 'Century,' pl. XXXI, fig. 1 (the lower figure in the plate). Bill less *Pyrrhuline* than in the preceding species, more so than in the next. Length about six inches and three-quarters, of wing three and one-eighth, and tail two and three-quarters. Female rather less; her colour deep brown above, with paler lateral

margins to the feathers; below light yellowish-brown, each feather with a dark central line; a broad pale supercilium reaching to the occiput, and another pale line from the base of the upper mandible. Himalaya.

3. *E. rodochroa*; *Fringilla rodochroa*, Vigors, *P. Z. S.* 1831, p. 23; male figured in Gould's 'Century,' pl. XXXI, fig. 2, but the middle of the crown erroneously represented as of the same pale rosy colour as the eye-streak and a slight frontal band. Beak scarcely more bulged than in *Linota cannabina*, and chiefly so as viewed from above. Length about five inches and three-quarters, of wing two and three-quarters, and tail two and three-eighths. Female paler and more decidedly streaky than that of the last species, especially paler upon the rump and upper tail-coverts, and with the light supercilium much less distinct and contrasting with the feathers above and below it: in the female of *E. rodopepla*, these last are dark and contrast strongly with the broad pale supercilium. Himalaya.

We might next pass to the Linnets; but there is a long-winged and more terrene form, with narrower and more elongated beak than in the last, which cannot be introduced better than in this place, and which constitutes the division.

Pyrrhospiza, Hodgson, *M.S.* Bill conical, elongate, with a slightly curved outline above and below, somewhat compressed, and tapering evenly to the tip as viewed from above; the gonys arched: wings long, reaching to more than half the length of the tail, which is also moderately long; the first four primaries subequal, the second and third being rather the longest. Feet adapted for ground habits, the toes rather long, with large and arched claws, especially that on the hind-toe.

P. punicea, Hodgson, *M.S.* Length about seven inches and a half, of wing four and a half, and tail three and one-eighth; bill to forehead five-eighths of an inch, tarse seven-eighths, middle toe and claw an inch, hind toe three-quarters of an inch: upper-parts nearly uniform dusky-brown, the feathers margined paler; forehead and rump, with the cheeks, ear-coverts, and the under-parts excepting the abdominal region, roseate in winter, brightening to rich crimson in the breeding season, and varying to orange-saffron*; flanks and abdomen coloured

* A variation more or less frequent in the species of *Loxia*, *Corythus*, *Propyrrhula*, *Brythospiza*, *Linota*, &c.

like the back; bill dark horny, and feet dusky-black. Female devoid of the red, having the forehead, cheeks, fore-neck, and breast, more or less fulvescent, each feather marked with a blackish mesial streak, widening at the tip; belly and lower tail-coverts dingy. Himalaya.

A second species of this division not improbably exists in the *Fringilla sanguinea* of Gould, *P. Z. S.* 1837, p. 127, received from Erzeroum. The form would seem allied to *Montifringilla* of Brehm, and holds the same relationship to the *Erythrospiza* group, which *Montifringilla* does to the restricted *Fringillæ*, as exemplified by the British Chaffinch and Bramble-finch. The next is an analogous long-winged modification of the true Linnets.

Fringillanda,* Hodgson, *As. Res.* XIX, 158. This may be described as a Linnet with very long wings and tail, and somewhat elongated beak. The plumage is remarkable for the absence of any rosy colouring.

Fr. (v. *Montifringilla* ?) *nemoricola*, Hodgson, *loc. cit.* Himalaya.

Procarduelis, Hodgson, *MS.* If the *Erythrospiza redochææ* approaches so closely to the true Linnets that it might even be classed with them, did not the division *Erythrospiza* exist to claim it as an aberrant member, so the present form might include the sub-division of Redpole Linnets (*Rubricapilla* of Brehm,) were it not that this falls better under true *Linota*, as exemplified by *L. cannabina*, which again is directly connected with the Redpoles by the intervention of *L. montium*. The present form is indeed an *Erythrospiza* with a slender *Carduelis* bill, and exhibiting a marked affinity for the Redpole Linnets; but it will not bear to be admitted into either of the established sub-divisions.

Pr. nipalensis; *Carduelis nipalensis*, Hodgson, *As. Res.* XIX, 157: *Linota saturata*, Nobis, *J. A. S.* XI, 192. The *Linota fusca*, Nobis, *ibid.* p. 193, so nearly approximates to the female of the present species, to judge from my description of it, that I shall here provisionally refer it to *Pr. nipalensis*, although my impression (from recollection) still is that it constitutes a distinct species, referable to true *Linota*: this question must remain in abeyance until the *L. fusca* can be verified on additional specimens.

Carduelis, Stephens. The Goldfinches. I have been assured that

* Spelt *Fringalanda* in the original, evidently a mistake.

as many as three species of true Goldfinches, allied to the European species, and similarly adorned with crimson around the base of the beak, inhabit Chinese Tartary, and at least one I believe occurs at Darjeeling; but I have never chanced to see either species in any collection from the Himalaya, though the two following are described to inhabit the range.

1. *C. caniceps*, Vigors, *P. Z. S.* 1831, p. 23; Gould's 'Century,' pl. XXXIII, fig. 1, and more correctly represented in Royle's 'Illustrations of the Botany &c. of the Himalaya mountains,' pl. VIII; Gould's figure being much too dark, and, together with that of Royle, having the wings too short, and the fore-neck and breast too uniformly embrowned, at least than in an Afghan specimen from which I took the following description.—"Differs most obviously from *C. communis* in the absence of any black upon the head, excepting between the bill and eye. Length about four inches and three-quarters, of wing three and a quarter, and tail two and one-eighth; bill to forehead five-eighths, and tarse half an inch. Upper-parts light greyish-brown, greyer on the head and neck; band crossing the front of the neck, with the sides of the breast, the same: forehead and around the bill crimson; and wing black, marked with bright yellow, and with white on the extremity of the outer edge of the tertiaries, as in the European species; tail likewise similar to that of *C. communis*: the rump, upper and lower tail-coverts, belly, middle of breast, and around the crimson of the throat and sides of the head, are white: beak pale caraceous with a black tip; and legs pale."

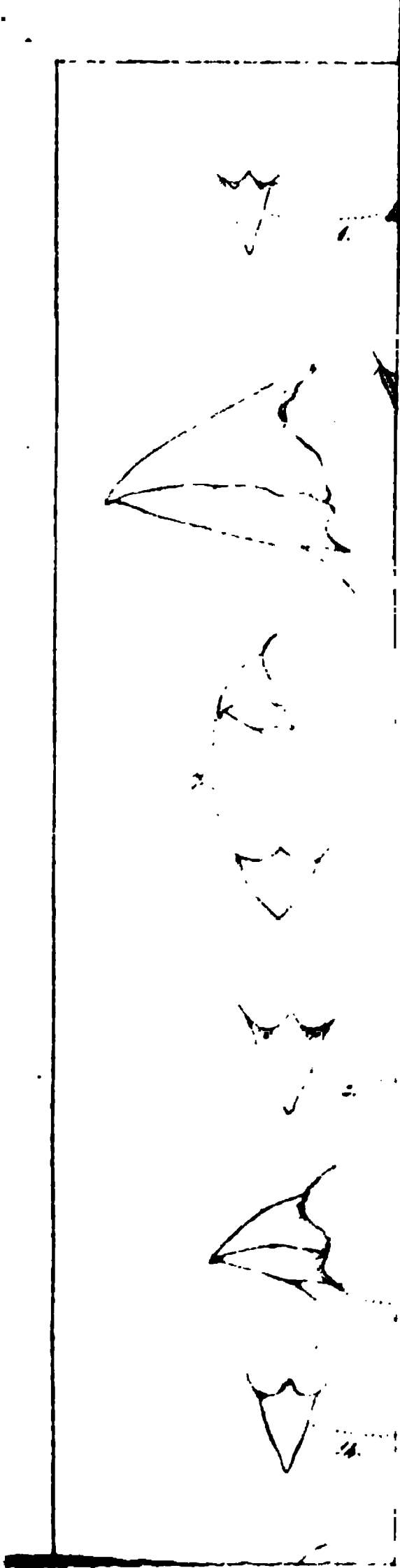
2. *C. Burtoni*, Gould, *P. Z. S.* 1837, p. 90. "*C. fronte et regione circum-oculari pulchrè roseis; vertice genisque nigris; corpore obscure fuscescenti-roseo, alis externè nigris, singulis plumis plùs minusve albo ad apicem notatis; alâ spuria albâ; rectricibus caudæ nigris, duabus intermediis ad apicem albis, duabus proximis longius ad apicem albis, reliquis albâ notâ internè ad basin excurrente, ornatis; rostro, pedibusque pallidè fuscis. Long. tot. $6\frac{1}{4}$ unc.; rostri $\frac{5}{8}$; alæ $8\frac{1}{8}$; caudæ $2\frac{1}{2}$; tarsi $\frac{3}{4}$. Himalaya. This species departs in some respects from the other members of the genus, particularly in the robust form of the beak, which is slightly angulated at the base: the form of its wings and tail, together with their peculiar markings, however, clearly points out that it is only an aberrant species of that group."*

Chrysomitris, Boie. The Siskins. The only Himalayan Siskin I know, like the Goldfinch last described, is remarkable for its thickened beak, approximating it to *Ligurinus*, Brisson, or the Greenfinches; one species of which, inhabiting the western coast of S. America, the *L. xanthogrammica*, G. R. Gray, presents a close approach on the part of the Greenfinches to the Goldfinches, the Siskins, and also to the Linnets, the form of its beak scarcely differing from that of the Himalayan Siskin, or

Chr. spinoides; *Carduelis spinoides*, Vigors, *P. Z. S.* 1831, p. 44; Gould's 'Century,' pl. XXXIII, fig. 2.

With the Siskins I terminate the series of Indian true Finches; and next in succession would come the Greenfinches, which would bring us back to the Grosbeaks with which we commenced; but this circle might be formed quite as satisfactorily in various other ways, the transitional forms of the present series being so numerous and completely intermediate, that all minute classification of them must be, in various instances, more or less arbitrary. By way of assistance to the student, I annex a plate with representations of the beaks of most of the species here comprised: but it must be remembered that it is not the beak alone, but the *ensemble*, which is our guide in the systematic arrangement of the *Fringillidæ*. In various most natural minor groups of this family, the same variety of modifications of the bill present themselves again and again, even to the Bullfinch, Grosbeak, and Goldfinch, extremes of form; as is especially well exemplified by the very peculiar group of short-tailed Finches so extensively developed in the Gallapagos islands; and in the instance of the common northern Snowfleck (*Plectrophanes nivalis*) and the Alpine Snowfinch (*Montifringilla nivalis*), we find the closest approximation in general characters combined with a very striking diversity in the conformation of the beak, which in the one case is that of a Bunting, and in the other that of a restricted *Fringilla*; the affinity of the birds themselves being further manifested even by the seasonal changes of colour which take place in the beak, however dissimilar its form, for in both of these birds it turns quite black at the breeding season.* Were we to follow the indications

* Mr. Strickland, in his recent letter to me before referred to, alludes to "the many cases among the *Fringillidæ*, in which the form of beak must give way to the preponderance of other characters, and especially to the style of colours in the plu-



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furnished by the beak alone, we should have to arrange various most incongruous species together, which in their affinities are much further removed apart than are the Snowfleck and Alpine Snowfinch, with dissimilar beaks; but it will not do, on the other hand, to disregard important distinctions in the form of this part, even when the rest of the structure is in accordance, and hence it appears impossible to arrange into intelligible minor groups the enormous series of the *Loria* and *Fringilla* of the old systematists, without recognising as many and as minute divisions as have been adopted in this synopsis. I now pass to the genus.

Emberiza. The Buntings: of which the Indian species are referred to a group, *Euspiza*, by Mr. G. R. Gray, consisting of the more slender-billed species generally; but the limits of which, apart from restricted *Emberiza*, I cannot at all recognise, and shall therefore retain them under the latter title.

1. *E. Lathamii*, Gray, *Zool. Misc.*, I, p. 2; *E. cristata*, Vigors, *P. Z. S.* 1831, p. 35; *E. subcristata*, Sykes, *P. Z. S.* 1832, p. 93, (the female); *E. erythroptera*, Jardine and Selby, *Ill. Orn.*, 1st series, pl. CXXXII; *E. nipalensis*, Hodgson, *As. Res.* XLX, 157: type of *Melophus*, Swainson. More elevated parts of India generally, but chiefly the Himalaya.

2. *E. melanocephala*, Scop.; *Fringilla crocea*, Vieillot; *Xanthornis caucasicus*, Pallas; *Emberiza granativora*, Menitries; *Tanagra melanictera*, Guldenstadt. S. India.

3. *E. aureola*, Pallas; *Fringilla pinetorum*, Lepech.; *Emberiza sibirica*, Gm.:* Himalaya, Arracan.

4. *E. fucata*, Pallas; *E. lesbia*; apud Tem., nec Gmelin; *E. cia*, apud Jerdon, vide *J. A. S.* XI, 601. Bengal, Indian peninsula.

5. *E. icterica*, Eversm., apud G. R. Gray, who figures it as *Euspiza icterica*. Central and western India.

6. *E. flavicollis*; *Mirafra flavicollis*, McClelland and Horsfield, *P. Z. S.* 1839, p. 163, which species Mr. Strickland informs me pertains to the present genus. Assam.

7. *E. Buchanani*, Nobis; *Fringilla jamjohari*, Buch. Hamilton's draw-

image, of which," he adds, "I know no more striking instance than the *Emberiza palustris* vel *pyrrhuloides* (though I see, Gray makes these into two species), the beak of which is wholly unlike that of an *Emberiza*, yet in all other respects the bird almost exactly resembles *E. schæniculus*."

* I have copied the synonyms of *E. melanocephala* and *E. aureola* from Mr. G. R. Gray's work.

ings; probably *E. hortulana*, apud Sykes, *P. Z. S.* 1832, p. 93. Would appear to be closely allied to *E. hortulana*, but differs in having the head, neck, and streak descending from the lower mandible ash-grey instead of dull green. Indian peninsula.

8. *E. sordida*, Hodgson, *MS.* Presumed female about five inches and a half in length, the wing two and a half, and tail two and a quarter; bill to forehead nearly half an inch, and tarse three-quarters of an inch. General hue of the upper parts dull olive-greenish, the feathers of the crown and back partially tinged with rufous, having medial dusky streaks; alars and greater wing-coverts also margined with rufescent-brown, and the two greater ranges of wing-coverts tipped with dull whitish: throat, belly, and under tail-coverts, whitish-yellow, sullied on the breast, and marked with dusky streaks on the flanks and sides of the fore-neck: upper mandible and tip of the lower one dull horny, the rest pale; and legs also pale. Nepal. Described from a specimen taken to England by Mr. Hodgson.

The Indian Larks follow next, which are as follow:—

Pyrrhulauda, A. Smith. Of this African form, there is one common Indian species:—

P. grisea; *Alauda grisea*, Scopoli: *A. gingica*, Lath; *Fringilla crucigera*, Temminck. India generally.

Mirafra, Horsfield: the Agguns. The species of this genus vary considerably in the degree of thickness of the bill, and also in the length of the wings and relative proportion of the primaries; but the first quill is always short, though varying a good deal in development, and the second rarely equals the third. Those with shorter and more rounded wings are also of a thicker form and less active in their habits; while the others present a nearer approximation to the true Larks.

1. *M. assamica*, McClelland and Horsfield, *P. Z. S.* 1839, p. 162; described in *J. A. S.* XI, 199. Remarkable for its thick bill, and obese, squat figure. Wings moderately long, with the first primary an inch in length, or nearly so, the second a quarter of an inch shorter than the third, and the third, fourth, and fifth, equal and longest. Common in Bengal, Assam, and Nepal.

2. *M. erythroptera*, Jerdon, *MS.*; "*M. javanica* ?," Jerdon's Catalogue, *Madr. Journ.* XI, 33, and probably of Franklin's catalogue. This species a good deal approximates the *M. javanica*, Horsf., *Lis. Tr.*

XIII, 159, judging from the more full description of Dr. Horsfield's specimens by Stephens, in Shaw's 'Zoology': but the Javanese bird is stated to have "the greater portion of the outer tail-feather white, and the following is of that colour on its outer web only; whereas in the Indian bird the white is confined to the exterior web of the outermost feather. Length about five inches and a half, of wing three inches and one-eighth, and tail two and one-eighth; bill to forehead somewhat exceeding half an inch, and tarse three-quarters: the outermost primary seven-eighths of an inch long, and second an eighth shorter than the third, fourth, and fifth, which are equal. Upper-parts streaky, the centres of the feathers dusky-brown, and their edges light fulvous-brown; coronal feathers lengthened, as in the Larks generally: beneath pale fulvescent, the throat white, and the breast marked with large oval blackish spots: primaries and secondaries ferruginous on both webs of each feather, except towards the tip, this dusky portion increasing to the outermost: tail blackish, its four middle feathers brown, and the outermost only white on its external web: bill and feet pale, the beak tolerably thick. Inhabits the more northern portion of the peninsula of India, being represented by the next species southward.

3. *M. affinis*, Jerdon, MS. Very similar to the last species, but having much less ferruginous colour on the wings, this being confined to the outer webs of the primaries, and a deep internal margin to the basal half only of their inner webs, never extending across the feather as in *M. erythroptera*, but continued throughout the length of the inner margin of the secondaries: the wing also is somewhat differently formed, being rounder, with the short first primary longer and broader, exceeding an inch in length, the second three-sixteenths to a quarter of an inch minus the third, which equals the next three in some specimens, whilst in others the fourth is somewhat the longest: and the tail-feathers are less black, with the external web of the outermost, and a slight exterior margin to the next, fulvescent-white, occasionally spreading more or less on the inner web of the outermost feather. Inhabits the southern part of the peninsula of India.

4. *M. Hayi*, Jerdon, MS. Also very like the two preceding species, but readily distinguished by its coronal feathers forming a pointed crest, and by the total absence of rufous on the outside of the wings, while on the inner surface this is pale and diminished in quantity: the under-

parts also are nearly uniform pale rufescent, but little whiter on the throat, and with but few and small dark spots on the breast; and the sides of the occiput above the ear-coverts, with the nape and sides of the neck, are pretty much of the same colour as the parts below. The wings, too, of this species are remarkable for having the first primary but half an inch long, while the second equals or even somewhat exceeds the three next: and the tail has its outermost feather wholly to near the base, and also the greater part of the next, rufous-white. Discovered on the eastern coast of the peninsula by Lord Arthur Hay, a zealous and successful cultivator of Ornithology, to whose honour the species has been dedicated.

5. *M. cantillans*, Jerdon, *MS.*; the true *Aggus* of the natives of India. Most allied to the last species, and having nearly the same form of wing, but at once distinguished by the absence of any marked crest, and by having the outer web only of the penultimate tail-feather white, together with the whole of the outermost excepting an oblique basal third of its inner web. Length five inches and three-quarters, by ten inches in alar expanse; wing two inches and seven-eighths (or two and five-eighths in the female); tail two inches: first primary three-quarters of an inch, the four next generally about equal, but the second and fifth sometimes a trifle shorter. Upper-parts dusky brown, the feathers laterally margined and slightly edged at tip with rufescent-brown, imparting a little the appearance of the nestling plumage characteristic of the Lark tribe: alars and their coverts margined with rufous-brown: a pale streak over the eye; throat and below the ear-coverts whitish; and the under-parts pale rufescent with small breast-spots, in general not very distinct. Bill dusky horn-colour, the lower mandible pale; and feet fleshy-brown. Inhabits Bengal as well as the Indian peninsula, and is a favorite cage bird with the natives for its sweet and plaintive, but not much varied, song.

6. *M. phanicura*, Franklin, *P. Z. S.* 1881, p. 119. Remarkable for the length and straightness of its wings, of which the first primary measures an inch, and the second is a quarter of an inch shorter than the third and fourth. Inhabits the peninsula of India.

Coryphides, Nobis, *n. g.* In this form, the wings are long and straight, with the first three primaries equal (the representative of the usual small first one being obsolete). Bill rather short, subconical and moderately

compressed, but essentially Lark-like. Feet with shortish toes, and short but straight hind claw. The general contour much recalls to mind that of the northern Snowflecks (*Plectrophanes*).

C. baghaira; *Emberiza Bag-haira*, Franklin; *Baggeyra Lark*, Lath. *Alauda dukhunensis*, Sykes, P. Z. S. 1832, p. 93; described as *Corypha baghaira*, J. A. S. XI, 200: *Ortolan* of Europeans in India.

Alauda, Lin. Typical Larks.

1. *A. arvensis*, Lin. Nepal. Specimens of this bird sent as a new species by Mr. Hodgson differ in no respect from others killed in England.

2. *A. gulgula*, Franklin, P. Z. S. 1831, p. 119; described in J. A. S. XI, 201.—Var. (?), *A. gracilis*, Nobis, J. A. S. XI. 201; *A. gulgula*, apud Sykes and Jerdon.—Var. (?), *A. leiopus*, Hodgson, M S. A puzzling species, either subject to some degree of local variation, or, in Mr. Jerdon's opinion, separable into at least three most closely allied species as above indicated. Comparison, however, of numerous specimens from various parts renders the definition of these species or varieties extremely difficult, if not impossible. Those from southern India have the colours more intense, and for the most part agree with the Bengal specimen which I ventured to separate by the name *A. gracilis*, even according very commonly in the trivial distinction which I pointed out, of having the penultimate tail-feather somewhat largely tipped with the rufescent-white continued along its outer web, and this trifling character I have sought for in vain among heaps of the ordinary Bengal Lark killed for the table. Again, Mr. Hodgson marked a Nepalese specimen of the common Bengal variety as being probably distinct in species from his *A. leiopus*, and one of his specimens of *leiopus* resembles most minutely the common peninsular variety (or *A. gracilis*), while in general the Nepalese specimens seem to be rather short in the bill, and to have the outer tail-feathers of a purer and brighter white than in the others: but I confess my inability to draw up any marked and constant distinguishing characters. Specimens exactly resembling the common Bengal bird were procured by Sir A. Burnes in Scinde; and one from Arracan is remarkable for being rather small, and for having the exterior web of the penultimate tail-feather merely narrowly edged with rufous-white, instead of this occupying the whole outer web of the feather in question. I should remark that the Nepal specimens are also, in general, a good

deal less rufescent underneath than those from southern India, while the Bengal ones are in this respect intermediate. The common Bengal Lark very closely resembles the preceding species, or British Sky Lark, in its song and habits.

3. *A. malabarica*, Scopoli and Gmelin ; *A. deva*, Sykes, *P. Z. S.* 1832, p. 92 ; Jerdon, in 'Madras Journal,' XI, 31. So closely allied to the preceding as to bear out the supposition of the distinctness of the different races of the latter which I have brought together ; but at once distinguishable by the pointed form of its crest. Indian peninsula.

4. *A. raytal*, Buch. Hamilton, *MS.* Length five inches and a quarter, by eight and a half across ; of wing three inches and three-eighths ; tail two and one-eighth : bill to gape five-eighths ; tarse three-quarters, and hind-toe and claw half an inch. General hue of the upper-parts brownish-ashy, with narrow dark centres to the feathers ; of the lower white, faintly tinged with yellowish on the breast, where obscurely marked with small spots ; wing-coverts and tertiaries margined with pale fulvescent ; outermost tail-feather white, except the inner half of the internal web throughout its length, and the next tail-feather white along the marginal half of its outer web only ; there is also a whitish line through the eyes : bill pale horny ; and legs yellowish, the hind-claw not exceeding the toe in length. I obtained a fine specimen of this bird alive, and kept it for some time, when just as it had come into good plumage it died, and, as a specimen, was destroyed by the ants. Buchanan Hamilton received a pair from Lucknow ; and an example of apparently the same species was procured by Sir A. Burnes in the west.

Certhilauda, Swainson. Larks with slender incurved bill, and small first primary-quill to the wing. With the following exception, so far as known, natives of Africa.

C. chendoola ; *Alauda chendoola*, Franklin, *P. Z. S.* 1831, p. 119, (nec apud Jerdon). Bengal, Nepal, Northern India generally, extending westward to Scinde.*

* The following description was taken from a pale specimen of a large, thick-billed, subcrested Lark from Afghanistan. Length seven inches, or more ; of wing four inches ; and tail two and a quarter ; bill to forehead three-quarters of an inch, thickish and compressed ; tarse an inch or nearly so. Head crested as in *A. arborea*. Colour of *variety* pale sandy fulvescent-brown above, the centres of dorsal feathers darker, those of crown but slightly so : under-parts whitish, fulvescent on breast, with much

I have reason to believe that the series of *Alaudinæ* here given is yet incomplete; but that very few species, on the whole, remain to be added to the present synopsis of Indian *Fringillidæ*, notwithstanding that many more are currently ascribed to India in the old systematic works. With the assistance of the accompanying plate, little difficulty will be found in recognising the various divisions of these birds, which I have seen reason to adopt, if the descriptions themselves do not suffice for the purpose; and I may hope and expect that this endeavour at reducing the group to something like order, will lead to further examinations, more especially in the Himalaya and to the westward, in which latter direction we have at present by far the most to learn of the Zoology of India.

Of the birds noticed in this paper, the following species are all that are absolutely wanting to the Society's Museum:—*Passer pyrrhopterus*, *P. (?) concolor*, *Pyrrhuloides epaulatta*, *Carduelis caniceps* and *C. Burtoni*, *Emberiza flavicollis*, *E. sordida*, and *E. Buchanani*, and the male of *Pyrrhospiza punicea*, and female *Passer pyrrhonotus*: but better specimens are desirable of many more, as especially *Proparus chrysotis*, *Parus* (or *Sylviparus*) *modestus*, *P. dichrous*, *P. æmodius*, *P. melanolophos*, *P. iouschistos*, and *P. erythrocephalus*, *Passer pyrrhonotus*, *Amadina acuticauda*, *Estrela formosa*, *Pyrrhula nipalensis* and *P. erythrocephalus*, *Chrysomitris spinoides*, *Emberiza Lathamii*, *E. icterica*, and *Alauda raytal*; and, in general, specimens of the Himalayan *Fringillidæ* are very acceptable, for transmission to the Honorable Company's and different European national Museums.

blackish on the sides of the fore-neck meeting across: tail, excepting its middle feathers, having a subterminal dusky band, and tipped with pale fulvescent: also a pale superciliary streak to sides of occiput; and the beak and legs pale.

Memoir on Indian Earthquakes. By Lieutenant R. Baird Smith, Bengal Engineers.

Part III. Analysis of the Phenomena of Indian Earthquakes, as exhibited in the two preceding parts of this Memoir.

All available facts connected with earthquakes in India and its frontier countries having now been given, it remains that the inferences authorised by these facts shall be duly exhibited. To this limited object I propose confining myself, it forming no part of my design to offer any general views of the theory of Earthquake shocks, but simply to illustrate their nature and causes so far as the materials collected in this country admit. The combination of these materials with others gleaned from different earthquake tracts, will doubtless lead to interesting general results, but such a work must be left to some one who commands better opportunities and greater leisure than I at present have.

The facts already given naturally subdivide themselves into two main classes; first, those illustrating the various phenomena; and second, those indicating the causes of earthquake shocks. To the former, attention will in the first instance be directed.

1. Characteristics of the Shock in Earthquakes.

The sensations experienced during earthquakes, as described by observers, are of three kinds.

a. A sensation of undulatory movements illustrated by comparison with the motion of a ship at sea, the wavelike progress of a snake in water, or the rocking of a cradle.

By far the larger portion of shocks in India give origin to sensations of this character. It would be tedious, and it is unnecessary to detail a large number of examples, but reference may be made to the great shock of the 19th February, 1842, as peculiarly illustrative of the point under notice. At Jellalabad it is said, "the earth swung to and fro like the rocking of a cradle," and at Peshawar, "the earth rocked like an infant's cradle, or like a ship at sea.

b. A sensation of sharp, severe concussion, as though the observer were struck heavily from beneath or behind; as examples of this se-

cond class, the shocks of the 9th February 1841, and 5th March 1842, may be referred to. In the former case the shock is described as having been "sharp and stunning, as if a blow had been struck under you;" and in the latter, the observer felt as though he had received a severe blow from behind, and been impelled forward.

c. A sensation of tremulousness, without any defined motion or concussion. This feeling ordinarily follows great shocks, when the crust of the earth seems to be gradually subsiding from intense disturbance to its former state of quiescence. The inhabitants of the valley of Cabool, distinguish this merely tremulous shock by a peculiar term calling it, "Zill-Zillie," in contradistinction to "Goozur," which appears to be the word used for the first class (a); numerous instances of class (c), occur in the register, among which may be mentioned the central Himalayan shocks of the 18th August and 23d September 1832, the lateral Himalayan shocks which followed the great earthquakes of August 1833, and February 1842, and the shocks in the delta of the Indus from the 18th to the 26th June, 1819.

d. The next characteristic of the shocks to be noticed, is the method, of propagation. There is evidence of two varieties of this, (1,) when the shock traverses a zone of the earth's surface, the breadth of which is very small as compared with the length; (2), when the shock is propagated on all sides equally as from a central point; the difference between the two varieties arises in all probability from difference of physical structure in the localities affected by the shock. The cases illustrating the first, as for example, the shocks of February 1842, or August 1833, occurred in the vicinity of great mountain ranges where faults and disturbances of the strata are numerous. The shocks were propagated in directions parallel to the mountains, and the breadth of the tracts affected by them was but small. The most marked case of circular propagation occurred in the alluvial plains of the delta of the Ganges on the 11th of November, 1842, and there, from the greater continuity of the strata, less obstruction would occur to the dissemination of the shock in all directions from the central point.

That shocks, whether they affect zones or spaces which, though not strictly circular, may yet for the sake of avoiding periphrasis be called circles, *are* propagated from central points or lines of maximum intensity is a fact so clearly established that it is scarcely necessary to advert to

it. The diminution of intensity with increase of distance from a central point is a phenomenon to be observed in all the principal earthquakes recorded in these pages, and although our observations are yet too imperfect to admit of our ascertaining precisely the place of maximum intensity, it is indicated generally in a sufficiently distinct manner.

Thus the valley of Jellalabad was the seat of the maximum intensity of the earthquake of 19th February, 1842, Lady Sale mentioning that its course from east to west was distinctly indicated by clouds of dust. The valley of Nepaul was also evidently the place of maximum intensity of the shock of 26th August 1833. Doctor Campbell observing that, "the valley of Nepaul though not geographically the central point, is most assuredly the portion that has suffered the greatest violence of the calamity." To the east and west of the valleys just mentioned the force of the shock probably decreased.

c. Had the materials collected admitted of it, I would willingly have given some examples of the velocity of propagations of earthquake shocks in this country, but unfortunately notices of time are so very imperfect and contradictory, that no inference worthy of confidence can be drawn from even the best of them. I must therefore content myself with a mere allusion to the velocity as a characteristic of the shock still requiring elucidation.

I now pass on to the next series of phenomena, viz. (2), motion of the ground during shocks.

The motion of the ground during shocks is of three different kinds.

a. A horizontal or forward motion, illustrated by the shock of the 5th March, 1842, during which an observer in Saharunpore felt himself, and the chair on which he was seated, impelled forward as if by a force applied from behind him. Another example is given by the shock of 3d April, 1810, (Part II. p. 47), in which it is stated, "the girandoles and lamps were seen to swing, and even the mirrors, (such as were fastened at the upper extremity with a cord), were seen to vibrate towards the wall". It may be inferred from this statement that the room in which these articles were suspended was moved bodily forward, while they by their inertia were left behind, and apparently moved towards the wall. In the account of the same shock a further illustration of the forward movement is given in the case of a person in the Lower Orphan School at Howrah, whose couch was

moved forward nearly a foot from its original position, and subsequently thrown back again; these instances will serve to explain the first kind of motion.

The second is :

b. A vertical, or as many observers style it, an "up and down motion", with no lateral movement. This variety was well marked during the minor shocks that followed the great earthquake of the 26th August, 1833. Dr. Campbell remarks, "many of them have been severe, and throughout the whole course of these visitations, there have been two distinct varieties observed in the character of the shocks; all those at the commencement were of the undulatory or swinging kind, the others wanted the swell, and were a violent up and down shaking, with little lateral motion." The shocks of the 4th October and 29th November, 1838, which were severe, were of the vertical kind.

c. The third kind of motion observed is a combination of the two preceding, giving rise to an undulatory movement or swell like that of the sea. This is by far the most common species of motion accompanying earthquake shocks, and is sometimes exhibited on a very large scale, as during the Jellalabad earthquake of 1842, the Nepaul earthquake of 1833, the Scinde earthquake of 1819. The surface of water in ponds and rivers frequently exhibited the undulation, as during the Calcutta earthquakes of the 11th November, 1842, and the great shock of the 2nd April, 1762, when the water in tanks in Calcutta rose upwards of 6 feet, and formed large waves.

In some instances the shocks commence with the vertical and terminate in the horizontal motion; this remark is illustrated by the phenomena of the shock of the 11th November, 1842, as described in Part I. p, 30. Two or three slight vertical shakes or heaves of the earth occurred, followed by a strong horizontal movement; this peculiarity seems to have been observed in Calcutta only; at other places the movement is described as of the purely undulatory character.

The undulatory motion has been remarked as invariably the most destructive kind of shock. Thus Dr. Campbell remarks of the Nepaul shocks in 1833, that the swinging motion was alone destructive to property, while the vertical, from the greater noise and more rapid succession, was the more terrifying. This difference of the two kinds of motion is easily explicable; the vertical shock merely raises the

building up without altering its centre of gravity ; while the waving motion throws it completely out of equilibrium and insures its fall ; the horizontal motion is occasionally destructive, but not so much so by any means as the undulatory.

3. Miscellaneous effects on the Earth's crust.

A certain degree and kind of motion of the ground accompany all earthquake shocks, but there are other effects on the earth's crust which are only occasionally observed ; these may now be noticed.

a. Alterations of level. The most remarkable cases of permanent alteration of level caused by earthquakes recorded in this memoir, are the Arracan and Chittagong earthquakes of 1762, and the Scinde earthquake of 1819. In the former case there is evidence of an upheavement of a large extent of the eastern coast of the Bay of Bengal, while in the latter the Ullah Bund, was suddenly raised and most striking changes occurred in the level of the eastern branch of the Indus. Subsidences of extensive tracts of country accompanied these upheavements : referring to Part II. page 48 and 50, examples of this kind of action will be found in abundance, and in the account of the Scinde earthquake, the formation of a salt water lagoon or marsh of nearly 2,000 square miles in area is noticed. At one part of the eastern branch of the Indus, a depression of level to the extent of 17 feet is recorded, while in other parts it varied from 4 to 10 feet.

b. Rents in the ground with ejection of water and gases.

A remarkable example of rents in the ground accompanied by the ejection of fetid water occurs in the account of the Cashmere earthquake of June 1828. Mr. Vigue remarks, " the earth opened in several places about the city, and fetid water, rather warm, rose rapidly from the clefts and then subsided.

Another remarkable instance of a great rent occurs in the Calcutta earthquake of 1737, when the English church is said to have sunk bodily into the ground.

In the Matura earthquake of 1803, extensive fissures were observed in the fields, through which water rose with great violence, and continued flowing from the 1st to 24th of September.

During the Chittagong earthquake of 1762, many great fissures in the earth occurred, from which water in large quantities rushed with

“prodigious” violence; these waters were strongly impregnated with sulphureous gas.

c. **Landslips.** These are confined to mountainous regions, and in the central Himalayan tract have been exhibited on a large scale. The effect of the earthquake of 1803, as described by Colonel Hodgson, in producing such slips of enormous masses of rock were of the most destructive character. “Whole villages” he remarks, “having been buried by the fall of cliffs and sliding down of the faces of hills.” Another instance is recorded on the authority of Dr. Falconer, as having occurred in the same region in 1809, when the Bishnoo Gunga, one of the great branches of the Ganges, was blocked up by a landslip, and the water raised to 40 feet above its usual level. Colonel Hodgson notices the slip of a whole face of a mountain 4,000 feet high, during the earthquake of the 28th May 1817. During the Cashmere earthquake of 1828, large rocks and stones were seen to roll down from the mountains, and by the Nepaul shock of 1833, the Passes across the Himalayas from the valley towards Lassa, were completely blocked up by rocks and earth thrown down from the mountains. By the Chittagong earthquake of 1762, several hills are described as having been rent asunder, sinking down and stopping up the river near them; these examples sufficiently illustrate the extent to which landslips occur during earthquake shocks, and furnish striking indications of the great energy of the disturbing forces in operation.

d. **Formation of sand cones.** The only instance recorded in which these cones, so frequently observed during the Calabrian and South American earthquakes, were formed, is in the Scinde and Cutch earthquakes of 1819. “During the earthquake,” it is remarked (Part II. p. 33,) “numerous jets of black muddy water were thrown out from fissures throughout this region (the Runn of Cutch,) and cones of sand, six and eight feet high were thrown up;” no facts are given whereby we can form any opinion as to the method in which these cones are formed, or of the causes to which they are due.*

e. **Effects on springs.** The Jellalabad earthquake of the 19th February, 1842, furnishes the only ascertained instance of a shock having produced any perceptible effects on springs. These effects

* We are informed that in the valley of the Irrawaddy no earthquake occurs without numerous ejections of *black sand*, stinking water, &c. &c. This locality is subject to very frequent shocks.—Eds.

are described in Part. I. of this Memoir; the water of the Sonah spring was deprived of its ordinarily high temperature, and the quantity of water discharged fell much below the usual average, and the flow occasionally ceased altogether.

I have no doubt that were observations to be more minutely made, many cases of this class would be discovered; they are not unusual in other earthquake tracts, and doubtless frequently occur in India.

4 Sounds accompanying Shocks.

a. Subterranean sounds. Although sounds as if in the interior of the earth are occasionally noted as accompanying shocks, they would appear to be rare. An example is found in the first shock of the Great Nepaul earthquake of 1833. During this shock there was a distinctly audible noise as of ordnance passing rapidly over a draw-bridge, of which Dr. Campbell remarks; "I felt it was travelling with the speed of lightning towards the west, and just under my feet;" a second case occurred at Ram Sing Chok, north-east of the Nepaul valley, where it is said that for four or five days preceding the earthquake, "noises similar to the firing of cannon were heard as if underground;" a third example is furnished by the Jellalabad earthquake of February 1842, of which Lieutenant Eyre remarks, "A loud subterraneous rumbling was heard as of a boiling sea of liquid lava, and wave after wave seemed to lift the ground on which we stood, causing every building to rock to and fro like a floating vessel." These are the only cases I have found in which sounds appeared to be in the earth.

b. Sounds in the air. These sounds are of two different kinds; 1st explosions, which vary in intensity from the sound of a cannon to a rumbling noise; the Cashmere earthquake of the 26th of June 1828, furnishes an example of the highest degree of intensity; "on that night," Mr. Vigne states, "only one shock took place, but just before sunrise there was another accompanied by a terrific and lengthened explosion louder than a cannon; on that day there were twenty such shocks each with a similar explosion;" similarly in describing the Nepaul shock of 1833, Dr. Campbell remarks, "in a dead calm the noise of a hundred cannon broke forth." The Jellalabad earthquake of 1842, was preceded by a "rumbling noise like a heavy wagon rolling over a wooden bridge." Under dates 25th July, 26th September, and 6th November

1842, other examples of the rumbling noise accompanying shocks will be found.

2d. A rushing sound. In describing the shock of 2d July 1832, (Part II.) Dr. McClelland remarks, "during twelve seconds the earth shook or rather trembled, and afforded a noise which it is difficult to describe, but which may be compared to the sound of a heavy but transient rush of water: the noise preceded and succeeded the motion about three seconds." Similar rushing sounds accompanied the shocks of the 23d September 1832, 30th May 1833, and 4th January 1835. The Calcutta shock of the 11th November 1842, is described as having been accompanied by "a noise which at first resembled a mighty rushing wind," and afterwards "the loud rattling of carriages over a stony street;" the shock of the 19th June 1819, as felt at Chunar, "was accompanied by a noise in the atmosphere resembling the rapid flight of birds."

These sounds always appear to be in the air, and although not invariable accompaniments of earthquake shocks, are rarely wanting. The movements of the crust of the earth must communicate similar movement to the air, and hence give rise to sounds; but it must be confessed that this cause is not sufficient to explain satisfactorily the loud and sudden explosions, and the peculiar rushing or whizzing sounds, that are so often observed; explanatory evidence is not yet collected to enable us to form a confident opinion, and although plausible speculative causes might be stated, I prefer waiting for further information, especially as among materials not yet arranged, there appear some facts which may illustrate this subject.

There is a notice of a sound observed during the Scinde earthquake of 1819, which although merely incidental and far from specific, yet merits remark. Under date the 25th June 1819, (Part II. p. 36,) an observer at Porebunder states, "the late phenomena have brought to my recollection, my having observed to an Officer of the Marines about the beginning of March last, that there was a cloud in the north east, which appeared uncommonly charged with electric matter; its direction was nearly opposite to the one from which I heard the sound that preceded the great shock of the 16th." It is perhaps rash to base any inference on an isolated fact like this, but it leads me to suspect

that the peculiar rushing or whizzing sound previously alluded to, is an indication of the discharge of electric matter, such a sound being familiar to those who have ever watched the phenomena of electric discharges in the laboratory.

5. Meteorological Phenomena accompanying shocks.

a. Barometric observations on the state of the Barometer during earthquakes in India, are few in number and not decisive in their results. In relating his account of the shock of the 23d January, 1832, Lieutenant Burnes notes, "the atmosphere had indicated nothing unusual before the earthquake, nor did the Barometer undergo any variation before or after it." During the Calcutta earthquake of the 11th November, 1842, an interesting Barometric phenomena was observed in St. Xavier's College, where the mercury rose and fell repeatedly to the extent of seven or eight tenths of an inch during the shock; "again, during the same shock, an observer on board the ship "Southampton" in describing a peculiar luminous appearance that accompanied the earthquake remarks, "the Barometer had slightly fallen previous to this, whether from the preceding rain or caused by the earthquake it is for others more capable to judge; I am inclined to think from the latter." It is difficult indeed to say whether the movement in this case was merely a result of the earth's movements, or of atmospheric disturbance, but from the quantity of rain that accompanied the shock, it is probable it was due to the latter. The following notices however throw considerable doubts on the Barometric movement in this case, and shew that it certainly was not general; Mr. Piddington remarks, "it did not occur to me to examine the Barometer, but I found no difference afterwards at home, and a friend who has an excellent Simpiesometer assured me that no effect was produced upon it, he having examined it immediately afterwards, so that in slight shocks the atmosphere seems to have no share."

Arranging the materials given in the general Tabular view of Indian earthquakes, (part II, p. 63,) so as to exhibit the relation of the number of shocks to the months of the year, we have the following general results:—

Number of shocks in January,	..	..	..	..	7
„ „ February,	..	..	..	..	7
„ „ March,	..	..	..	..	3
„ „ April,	..	..	..	..	15
„ „ May,	..	..	..	..	46
„ „ June,	..	..	..	..	14
„ „ July,	..	..	..	..	4
„ „ August,	..	..	..	..	15
„ „ September,	..	..	..	..	14
„ „ October,	..	..	..	..	8
„ „ November,	..	..	..	..	4
„ „ December,	..	..	..	..	5
Total,	..	..	..	..	144

Dividing the year into two portions, from May to October, the summer and rainy seasons ; and from November to April, the winter and spring seasons, we have the following distribution of shocks throughout the year.

During summer and rainy seasons,	..	..	..	..	93 Shocks.
„ cold „ spring „	..	..	..	..	42 „
Excess in summer and rainy „	..	..	..	..	51

Had all the minor shocks been taken into account, the excess would have been very much greater, but the above is sufficient to shew that earthquakes are much more frequent in the months between May and October, than during the remainder of the year. Of these months, June, July, and August exhibit some of the severest shocks, as also the greatest number.

Now from May to October, the mean height of the Barometer is invariably less than from November to April inclusive. Prinsep's Meteorological Tables, (As. Soc. Journal, vol. I. p. 29,) furnish materials for comparison on this point, for several places within the earthquake tracts adverted to in the preceding part of this Memoir. The following three are given as illustrations.

Calcutta.

Mean height of Barometer from May to October,	..	.	29.606
Ditto, ditto, November to April,	..	..	20.908
			<hr/> .. 302 <hr/>

Ava.

Mean height of Barometer from May to October,	..	..	29.461
Ditto, ditto, November to April,	..	..	29.684
			<hr/> ...283 <hr/>

Saharunpore.

Mean height of Barometer from May to October,	..	..	28.573
Ditto, ditto, November to April,	..	..	28.959
			<hr/> ...386 <hr/>

It therefore appears that during the six months of the year when the Barometer is lowest, the greatest number of earthquake shocks occur, and further, since during the months of June, July and August, the mean of the height of the Barometric column is lower than at any other period of the year, (taking averages of a number of years), there appears an interesting coincidence between the greatest intensity of the forces to which earthquakes are due, which are displayed during these months, and the minimum weight of the atmospheric column. I note this point as an interesting one, since it has been observed in other earthquake countries, and it appears to be one of those facts which will be found intimately connected with the theory of earthquakes.

There are other facts, to be noticed immediately, which further establish the connection between the depressed state of the Barometer and the occurrence of earthquake shocks, such as heavy rains, hurricanes and storms, a close and sultry state of the air, &c. These will be recorded in their proper order and are now merely alluded to as tending to establish the connection just stated.

6. Direct Thermometric observations on the Thermometer during our Indian earthquakes are as rare as those on the Barometer, but the uniform testimony of observers establishes the fact, that a high

temperature is an almost invariable accompaniment of such shocks. Parts I and II, present many examples; but a few of the principal only need be stated in illustration of the point under notice. During the great shock of June, 1819, it is stated that "the heat for the last two or three days has been excessive." Relative to the weather preceding the Jellalabad shock of the 19th February 1842, Captain Eyre remarks, "On the 6th we had a heavy fall of rain since which the weather has become exceedingly close, this morning (the 19th), it was observed that an unusual degree of heat and stillness pervaded the air." An interesting notice occurs regarding another Jellalabad shock under date the 21st July 1842, it is as follows: "a severe shock of an earthquake was experienced at Jellalabad on the 21st at a little past 9 p. m., a reduction of temperature followed it." The Calcutta earthquake of the 11th November 1842, was also preceded by very hot weather, as were those of the 21st and 23d May of the same year. A specific statement of the condition of the Thermometer at Calcutta during the great Chittagong earthquake of April 1762, is given by the Rev. Mr. Hirst who remarks, "the heights of the Thermometer on Farenheit's scale was then at Calcutta, 95.80," much higher than it had been observed to be during the whole month. The preceding will suffice to shew that great heat is a characteristic of the weather accompanying earthquakes in this country, the high temperature seems to precede the shock, a decrease to follow it.

It has formerly been remarked that the largest portion of shocks occur, during the months between May and October, or the hot and rainy seasons of our year. May, usually the hottest month of the year, shews the largest number of shocks, a number indeed as may be seen on referring to the table of distribution of shocks throughout the year, very much greater than any of the rest. The inference from particular cases of earthquakes is therefore confirmed by the result of the general examination of the whole number recorded.

c. *Pluviometric.* Heavy rain although certainly not an invariable, is a very frequent accompaniment of earthquakes in India; the rain in some instances follows, in others precedes the shocks. The Nepaul earthquake of August 1833, is an instance of the former, it being noted, "that torrents of rain fell in the valley, washing down the walls that had formerly only been shaken." Relative to the

earthquakes of the Jellalabad valley, as illustrations of the latter, Captain Eyre remarks; "These shocks have always appeared to me to be in some way connected with heavy rain beforehand." Similarly during the shock of the 11th November 1842, heavy rain fell during the shock, none having fallen for some time before. The shock having been felt about half past nine P. M. the rain commenced about 8 P. M. and continued till about 2 A. M. Captain Hannay records in his notice of the earthquake of the 14th January 1839, experienced in Assam that "some days of heavy rain in the valley, and snow in the mountains preceded it," also in his notice of the shock of the 3d June 1839, it is observed the weather was wet and disagreeable. It would therefore appear that heavy rain before, during and after shocks has frequently been observed; and this remark, founded on our local experience, is interesting, as being in perfect analogy with observations made on earthquakes in other parts of the world.

d. Winds and storms. There are several cases noted in the preceding parts in which a connection is indicated between earthquake shocks and atmospheric currents. The circumstances accompanying them are such as to render it difficult to suppose that the connection was merely an accidental one. Thus during the Calcutta shock of the 11th November 1842, it was observed, that "there was an unpleasant stillness in the air previous to this occurrence (the earthquake), but the wind rose strongly from the eastward almost immediately afterwards." Again in the notice of the Delhi earthquake of the 24th October 1842, it is remarked, "the wind was west, from which quarter it had been blowing steadily for some days, but just previous to the earthquake it was in strong gusts." The great Calcutta shock of October 1737, was accompanied by "a furious hurricane at the mouth of the Ganges which reached 60 leagues up the river," and the shock of April 1810, in the same locality, occurred contemporaneously with a heavy north-wester. The Chittagong earthquake of 1762, was in like manner accompanied by "fresh gales of wind at south-east" and lastly, the severe shock of the 19th October 1800, at Ongole, occurred while "the wind was blowing a hurricane, and rain so heavy was falling that the whole country exhibited an entire sheet of water." These cases may suffice to draw attention to the possible connection of earthquakes with variations of winds

and the occurrence of storms. That the connection is not an invariable one, scarcely lessens the interest of the enquiry, as observations may yet be accumulated which will exhibit the causes of this variability, and throw light on the true nature of the dependence of the earthquakeing and atmospheric forces on each other. As a very interesting indication of this dependence, arrived at by a totally different course of enquiry from the present, I may quote the few following remarks from Mr. Piddington's Sixth memoir on the Law of Storms in India (*Journal Asiatic Society*, No. 127, p. 717.) "Before I conclude, I must allude, as a question of research only, to another remarkable feature in these tracks, and indeed all the storm tracks we have yet traced out, which is this: If we look at the chart, we shall see that almost the whole of the storms seem to come in groups from certain quarters, and these quarters are those in which active and half extinct volcanoes are situated.

"Considering our charts in this point of view, we shall observe that, to commence from the northward six tracks, Nos. XXIX to X appear to come from the north-eastward, or from the direction of the great volcanic centre of the Japanese archipelago. Between these we have two tracks, Nos. II and XIX, which may be supposed, if they originated at so great a distance, to have come from the active volcanoes at the north extremity of the Marianas, as may also Nos. XVIII and X.

"We have then two groups from Nos. VIII to XXVII, which all pass over, if they do not arise from active or half extinct volcanoes; the north extremity of Luzon having the volcano of Camiguin, and another yet active, while a chain of active or half extinct ones extends through the almost unknown centre of that Island.

"We have next a group of three storms, Nos. XVI to XXI, which appear to issue from the straits of Mindoro, the eastern extremity of which has the great volcano of Albay; and to the south of it, the half extinct or active ones of Samar, Leyte, and Mindanao. Lastly we have a group of three tracks which originate at or cross the Island of Palawan, which having itself active volcanoes, has also to the south eastward of it Mindanao, with Siao, and Sangir a chain of active volcanoes." Mr. Piddington after stating that his object is simply to draw attention to circumstances sufficiently remarkable to merit it, further remarks, "I have already alluded to the well known fact at Manila

that no hurricane occurs without some volcanic action more or less violent being observed, and as the whole of the chain of the Phillipines from Mindanao to the northern extreme is full of active or partially active centres, far more so even than Java, there seems good ground for supposing some connection, but whether the volcanoes are the cause, or are agitated by the effect of the atmospheric disturbance, we are as yet ignorant. In the Bay of Bengal, if the tracks of most of our storms be prolonged to the south-east they will all be seen to start from near the yet active volcanic centre of Barren Island, and some of the old ones which I have traced certainly do the same.

“ Again ; if we look at Mr. Redfield's chart of West Indian hurricanes, we shall find them also mostly beginning about the volcanic Leeward Islands. The neighbourhood of Bourbon and Mauritius, and the Timor sea, where hurricanes seem very prevalent, are all instances of this sort of relation whatever it may be, if it really exists.”

The general question of the relation of volcanic to atmospheric disturbances is one well worthy of investigation, and it is to be hoped that observers favourably situated may not neglect opportunities of collecting such information as may throw light upon its true character. Circumstances are favourable for observations on this point in the earthquake tract of the eastern coast of the Bay of Bengal, including Chittagong, Arracan, &c. along the whole of the Malayan Archipelago and the coast of the Persian Gulf.

e. Mists and Fogs. The last indication of atmospheric disturbance during earthquakes I have to notice, is the not unfrequent occurrence of mists and fogs in connection with the shocks. Thus during the earthquake of the 21st May 1842, it is noted “ that for some days before and after this, the sky had a white, thick, hazy appearance ;” again during the Assam shock of the 4th March 1840, it was observed by Captain Hannay, that although “ the sky was cloudless yet the atmosphere was hazy.” The shock of the 24th October, 1832 near Delhi was in like manner accompanied by haziness in the air.

The general results under this head may now be summed up in a few words. The atmospheric phenomena which have been observed to accompany earthquakes in India, so generally as to suggest the existence of an intimate connection between the two classes of facts, are, a depressed state of the Barometer, unusually high tem-

perature, frequently very heavy rain, accompanied by storms and changes of wind with occasionally a misty and foggy state of the atmosphere.

6. Electric Phenomena accompanying shocks.

These have been observed but rarely in this country, a few instances however are recorded. During the earthquake of the 7th September 1842, at the moment of its occurrence, sensations precisely similar to those accompanying an electric shock, were experienced by an observer at Mussoorie in the Himalayas, as noted in detail in the register for 1842. During the shock of the 11th of November, of the same year, a peculiar brightness was observed on the waters of the Hoogly which was exactly contemporaneous with the shock, and on closing round the Southampton communicated to that vessel "a general and severe tremor as if a taut cable was grinding under the keel, or that a sudden squall had struck the ship." It was observed that this brightness could not possibly be the reflected light of the moon and the possibility suggests itself that it may have been a display of electric light. An interesting fact is noted among the Porebunder observations on the great Scinde earthquake of June 1819, under date the 24th of that month; after a severe shock accompanied by much rain, it is noted "Immediately after it observed a long narrow black cloud, running west and east, or quite the contrary way to what I am accustomed to see a line of such cloud extend: it appeared stationary for half an hour, during which time there were constant tremors in the earth." It is possible that these tremors may have been an effect of what has been called "the return stroke" or the passage of electric matter from the surcharged earth to the clouds, a not unusual phenomenon. During the month of April 1762, when the great Chittagong earthquake occurred, it is remarked by the Reverend Mr. Hirst, that "there was much thunder and lightning in this month." Similarly during the shock of the 29th October 1800, the incessant thunder and vivid lightning are specially remarked; it would therefore appear that severe shocks of earthquakes are frequently accompanied by electric phenomena, and although the facts may not be sufficiently determinate to enable us to say that such

phenomena are essentially connected with earthquakes they are yet enough to warrant our drawing attention to the subject and endeavouring to secure information more minute and specific.

We have not as yet any evidence from this country to indicate a connection between earthquake shocks and disturbances of the magnetism of the earth, although both in Europe and in South America, such a connection has been very distinctly exhibited, so much so, as to lead some to propose the magnetic needle as the best indication of earthquaking forces. The magnetic observatory of Singapore situated in the midst of one of the greatest tracks of volcanic force in the world, is peculiarly favourably placed for observations on this point, and as several earthquakes have occurred since its establishment it may be hoped that some interesting information has been collected.

7. Volcanic Phenomena accompanying shocks.

A few instances occur in the preceding portions of this memoir in which earthquake shocks are intimately connected with the action of volcanoes. Thus regarding the Scinde earthquake of 1819, it is remarked "the first and greatest shock occurred at a few minutes before 7 P. M. on the 16th June, but shocks of inferior violence continued till the 20th, when the volcano called Denodur, situated 30 miles north west from Bhooj the Capital of Cutch, burst into action and the movements of the earth immediately stopped." Again during the great shock of April 1762, it is observed by Mr. Edward Gulston "as we are informed that two volcanoes opened, I am in great hopes these will prove a sufficient vent to discharge all the remaining sulphureous matter in the bowels of these countries and put a stop to any further earthquakes here, at least for many years to come." During the principal shock of the Nepaul earthquake of 1833, vapour and flame were seen to issue from Nayadong one of the largest of the mud volcanoes of the Arracan coast. Whether these resulted from the mechanical effect of the concussion in opening some new fissure in the volcano or from an actual subterranean connection between the disturbing forces of the lateral Himalayan and Arracan tracts, there is no evidence to determine; the cases just noted occurred in volcanoes situated very near to, or actually upon the sea shore, a point which in the theory of the subject is worthy of

note, although, in accordance with the plan laid down for this analysis, I do not dwell upon it here.*

8. *Physiological Phenomena accompanying Earthquake shocks.*

Without inferring any actual connection between earthquakes and the diseases which are not unfrequently found to accompany them, the coincidence between the two is sufficiently remarkable to merit a brief notice in this analysis. The first instance is recorded in the note from Mr. Wathen's memoir on Kokan, (Part 2, p. 3,) where it is mentioned that in 1832 and 1833, the province was visited by constant earthquakes and simultaneously devastated by cholera. Again in 1828, during the severe earthquakes of that year in Cashmere, the cholera made its appearance with very fatal consequence to the inhabitants of the valley. The following extract from the Agra Ukbar of the 19th November 1836, gives another interesting instance of the coincidence now under remark; "Sumbhul (Rohilcund) a series of earthquake shocks has been for some time and is still felt at this place, the shocks are of almost daily occurrence and are accompanied with a heavy rumbling noise which traverses the entire place; the duration of each averages two minutes; co-existent with the phenomenon is a fever of a more virulent nature than for years has visited the town."

The unpleasant personal sensations experienced during shocks are repeatedly alluded to in the previous pages: Considerable details will be found in Part II; indeed scarcely a shock is recorded in which these feelings of nausea, tendency to faint, pains in the limbs and general lassitude of the system are not adverted to; they resemble strikingly the sensations experienced by many when the atmosphere is overcharged with electric matter, and may serve as another indication that, during shocks excess of electricity actually exists. When it is borne in mind that during earthquakes, large quantities of sulphureted hydrogen and other deleterious gases are evolved, and that to the presence of the former of these, high authorities have attributed the fatal fevers of Africa, there is nothing irrational in supposing that continuous earthquakes may induce diseases of severe types. Without

* In the account of the blowing up of the mountain of Gammacanore in the Moluccas in 1673, it is said that "there was first a great earthquake which overturned the surrounding villages and several thousands of persons were buried under heaps of stones. When the mountain blew up the weather was calm and very fine."—*Encs.*

attaching undue importance to the cases brought forward I may yet remark that the point is one well worthy of attention and investigation by better qualified parties.

9. Concluding Remarks.

Having now grouped as well as circumstances will allow, the various phenomena of Indian earthquakes, there remain only a few general remarks to conclude this part of the subject.

a. It will doubtless have been remarked that the localities subject to earthquake shocks, are characterised by certain features of general resemblance. In most, indications of volcanic action, of violent disturbing forces producing rents and fissures in the crust of the earth, of connection between the surface and interior of the earth, have been found. These features coincide with those of localities similarly affected in other parts of the world, and maintain that general analogy between earthquake tracts which has more than once been adverted to.

b. Of the earthquake tracts of India some are situated close to the ocean, others are removed from all connection, at least all external connection with it: this point is noticed because it has been thought by some that the presence of sea water is essential to the generation of the disturbing forces to which earthquakes are due. The central and lateral Himalayan tracts can scarcely have any connection with the ocean, removed as they are so far from it, and yet in these tracts, earthquakes of the utmost severity have been experienced.

c. The last peculiarity to be noted is the local nature of Indian earthquake tracts. Shocks occur in each of these with entire independence of the others, shewing that the forces operating in each are of local and limited extent. This circumstance is irreconcilable with the idea that earthquakes are due to the movement of a general fluid nucleus in the interior of the earth, it rather indicates that at various depths from the surface, reservoirs of materials, whether gases, fluids, or both, capable of generating disturbing forces exist, and that these reservoirs under ordinary circumstances act independently of all others.

To present at one view the contents of this part, the following tabular statement has been prepared.

*Synopsis of the Phenomena of Indian earthquakes.**1. Characteristics of the shocks.*

- a.* Undulatory shock.
- b.* Shock by concussion.
- c.* Tremulous shock.
- d.* Method of propagation.
- e.* Velocity of propagation.

2. Nature of the movement of the Ground during shocks.

- a.* Horizontal or forward movement.
- b.* Vertical or "up and down" movement.
- c.* Composite or wave-like movement.

3. Effect on the crust of the earth.

- a.* Alterations of level.
- b.* Formation of fissures with ejection of water and gases.
- c.* Landslips.
- d.* Formation of sand cones.
- e.* Effects on springs.

4. Sounds accompanying shocks.

- a.* Subterranean sounds.
- b.* Sounds in the air.

5. Meteorological Phenomena.

- a.* Barometric.
- b.* Thermometric.
- c.* Pluviometric.
- d.* Winds and storms.

*6. Electric phenomena.**7. Volcanic phenomena.**8. Physiological phenomena.**9. Concluding remarks.*

- a.* Geological resemblance of earthquake tracts.
- b.* Relation of earthquake tracts to the ocean.
- c.* Independent action of forces in Indian earthquake localities.

NOTE.—I may mention here that the large quantity of new materials connected with Indian earthquakes, which has come into my possession, since this paper was concluded will probably require the whole to be re-written so as to embody the new information obtained.

Notes, chiefly Geological, across the Peninsula from Masulipatam to Goa, comprising remarks on the origin of the Regur and Laterite; occurrence of Manganese veins in the latter, and on certain traces of aqueous denudation on the surface of Southern India. By Capt. NEWBOLD, F. R. S. Assistant Commissioner, Kurnool.*

Masulipatam stands on the sea coast in nearly 16° N. Lat: and about 28 miles N. from the principal northerly embouchure of the Kistnah.

The adjacent country is the flattish maritime plain which according to Benza, extends between the mouths of the Godavery and the Kistnah.

The alluvial sands that cover the surface rest on a bluish black tertiary, or post-pliocene clay, resembling regur, imbedding terrestrial marine shells of existing species, and apparently identical with the black clay beds underlying the Cities of Madras and Pondicherry and other places on the Coromandel Coast. In many places the overlying sand is aggregated into a loose sandstone of a nodular form, and often perforated with sinuous and straight cavities, the work of *pholades*. The structure of this sandstone, which contains fragments of recent shells, is here concretionary. The cementing matter is clay, and carbonate of lime with a little oxide of iron. The sand continues to cover the plain to the distance of 15 or 16 miles inland, partially under laid by these beds of black clay, to within some miles of Bezwarah, when the gneiss is first seen to outcrop from these recent strata.

The plain of Masulipatam, it is quite clear, once formed the bottom of a lagoon, or marine lake, and was elevated and dried up probably in the post-pliocene period. The channel of the Kistnah, which it is likely supplied much of the fresh water, appears to have suffered a southerly deflection from the elevatory forces and consequent alteration of surface.

At Bezwarah the gneiss rises into a ridge, 600 feet high, running N. E. and S. W. its dip confused and contorted. Through a gorge in this ridge at right angles with its direction, runs the Kistnah. No evidence could be discovered of the Kistnah's having cut the channel through the ridge: it appears to have been originally formed, like the trans-

* *Regur*, the black, tenacious, but usually fertile soils of central and Southern India are known by this name.—EDS.

verse river courses through the chalk escarpments of the weald, by the elevatory forces that raised the strata to their present position. The features of the original fissure have doubtless been modified by the abrading power of the river; which, when swelled by the freshes entirely fills the gap, about a mile in width, its sides rising rather precipitously from the river's banks.

Beyond this ridge, which is of no great length, the surface of the country appears flat as before, and the rise from the coasts scarcely perceptible. With regard to the theory, of the tract between Bezwarah and Condapilly having once formed the bed of an extensive lake, my friend Mr. Malcolmson has justly observed, that, "a careful survey of the hills from the summit shows, that they are short insulated ranges, such as are found over the Circars and other tracts rising from a level country; and that had a lake existed in the plain above, every slight rise of the river would have carried its waters round their shoulders to the North and South."

The gneiss composing the ridge of Bezwarah is garnetiferous, Cleavelandite often replaces the common felspar, and renders the gneiss liable to decay. It contains large veins of quartz, and is intersected by greenstone dykes, the presence of which may serve to account for the distortion observable in its strata.

A little to the N. E. of Bezwarah are the diamond mines of Mallavelly where the gneiss is in some places covered by a conglomerate sandstone, resembling the diamond conglomerate of Bangampilly and Kurnool, and of which it appears here as an outlying patch. The diamonds are however dug for in a bed of gravel composed chiefly of rolled pebbles of quartz, sandstone, chert, ferruginous jasper, conglomerate sandstone and kunkur, lying under a stratum of dark mould about a foot thick. Dr. Benza traced the conglomerate sandstone hence by Ellore and Rajahmundry to Samulcotah.

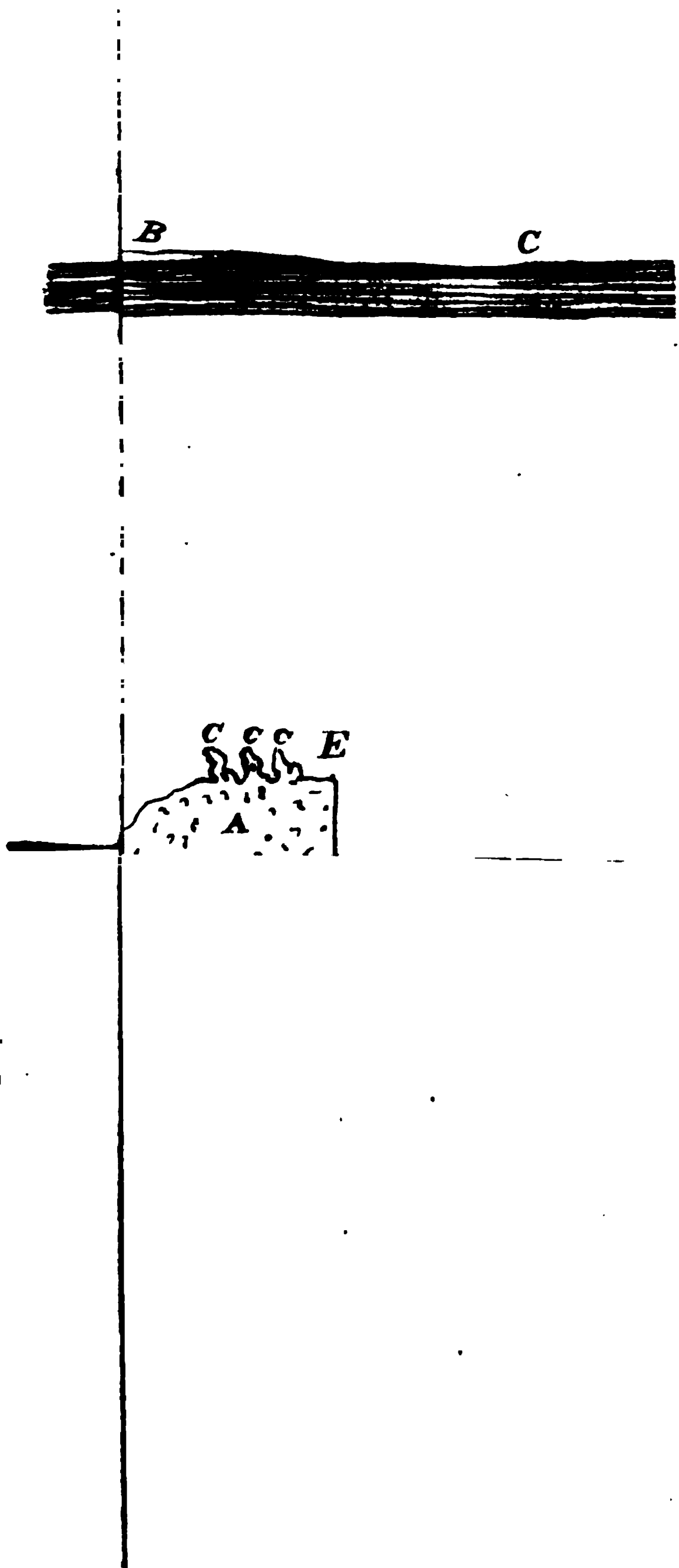
From Bezwarah by Condapilly to the vicinity of the Warapilly ghant, the hypogene schists, chiefly gneiss and granite occur. East of Warapilly these rocks are covered by the Northern termination of the Cuddapah limestone beds. The diamond sandstone associated with this limestone, stretches still further North as already mentioned, by the diamond pit of Mallavelly to Samulcotah.

A little North of Warapilly, granite and the hypogene rocks con-

tinue to Hydrabad, and 48 miles to the N. W. of that city to the village of Moonopilly, on the Beder, where they are covered by the great overlying trap formation.

Most of the rocks about Hydrabad are of granite, that of Moeb Ally is of the laminar variety, often approximating to gneiss. The rock on which stands the celebrated fortress of Golconda, rises in the centre of the Valley of the Moossi, about 6 or 7 miles westerly from Hydrabad, and is composed of a granite with reddish felspar, translucent quartz, with dull dark green mica, and a few crystals of hornblende. Of this granite, which resembles that of Syene, the domes and outer walls of the Mausolea of the old Golconda kings are built. Through this royal cemetery runs a dyke of a dark crystalline greenstone, nearly E. and W., which is probably identical, from its direction, with a dyke observed 6 miles west of this, between the British residency and the great tank of Hussain Saugur. The rocks of the dyke bear evident marks of the chisel; and no doubt furnished material for the sepulchres of the Golconda kings, which are constructed of this, or an exactly similar greenstone exquisitely polished.

From Golconda the road towards Beder lies, for the few first miles, over the low granitic ridges which form the northern side of the Valley of the Moossi, to Lingumpilly, near which the ridge gently sinks into an undulating plain. Between this village, and that of Puttuncherloo, which is situate about 18 miles W. by N. from Hydrabad, the face of the country has a gentle N. W. declination towards the bed of the Mangera. Granitic rocks constitute its basis as far as Cummumpilly about 50 miles W. N. W. from Hydrabad. The granite is both of the small grained, red felspathic variety, and large grained. Both varieties are met with at Kundi, and Moonopilly 48 miles from Hydrabad. The small grained is seen to penetrate the other in sinuous veins. There is also a third variety, fine grained, containing much quartz and imbedded nests of a dark steel coloured mica. Veins of reddish felspar with actynolite, and a little quartz also are seen. Both granite and gneiss, and the veins by which they are intersected, are penetrated by dykes of basaltic greenstone; the largest dykes observed were east of Puttuncherloo; a little W. of Lingumpilly and Mootinghi:—also at Sedashipett, and Yernanpilly. The Mootinghi dyke runs nearly N. and S., the rest preserve an Easterly and Westerly



the W. of Moonapilly, rounded and angular fragments of the

ly N. and S., the rest preserve an Easterly and W

direction. The felspar of the granite and gneiss near the line of contact, is deprived of its lustre and translucency: and becomes opaque and white like porcelain: the mica either almost disappears, or shrinks and becomes hard, compact, and of a ferruginous aspect; while the rock *en masse* acquires a tendency to split into rhomboids. Near the line of contact with the overlying trap a reddish felspathic zone is observed similar to that described as occurring on the trap and granite boundaries at Gurdinny in the S. Mahratta country, S. of Bejapore, which passes into pegmatite soil. The soil from Hyderabad and Golconda to Puttuncherloo is generally the light reddish sandy detritus washed down from the granite heights in the vicinity, occasionally mingled with nodules of a ferruginous clay resembling the debris of laterite. A little to the N. and W. of Puttuncherloo, the granitic soil thins out and disappears, leaving exposed the sheet of *Regur* that underlies it, and which occurs first at intervals, but afterwards as an almost continuous sheet from Moonopilly to Beder.

Between Puttuncherloo and Moonopilly the strips of granite alluvium with which it is alternated appear to have resulted from the decay of *salbendes* and bosses of granite, which formerly outcropped from the bed of the *Regur*, but have since crumbled down by a process of weathering, which I have described elsewhere; and being washed by the rains, have covered the surrounding soil with a *sandy* detritus thus:—(See plate, Diagram No. I.)

A. undecomposed granite.

B. B. B. decomposed granite forming an alluvial surface soil.

C. C. *Regur*.

Near Sedashipett, a stratum of kunkur intervenes between the *Regur* and the granite. The surface of the *Regur*, where it overlies the trap from Moonopilly to Beder, is often intermixed with the detritus of the outcropping trap and laterite rocks associated. The soil resulting from the disintegration of the former is easily distinguishable from the *Regur* by its much lighter and reddish tinge, arising from the peroxidation of the protoxide of iron it contains. The *detritus* of the darkest portions of the trap, even before peroxidation takes place, have a greyish or greenish-brown hue, totally dissimilar to the *Regur*.

Boundary of the great overlying trap formation of the Deccan.—A little to the W. of Moonapilly, rounded and angular fragments of the

trap of the overlying formation, are seen lying on and partially imbedded in the *Regur*, with scattered, rugged, scabrous blocks of a compact cream and buff-coloured limestone passing into chert. The latter contained a cast of a small fresh water shell resembling a *Physa*.

Ascending the gentle slope, beyond the village of Cummampilly, the overlying trap was first seen in situ in a section afforded by the steep bank of a nullah. The trap is petrographically identical with that of Bejapore. The structure is at once sheeted like that of modern lavas imperfectly columnar, and globular. The globular trap disintegrates by a process of concentric exfoliation. The concentric coats, weather into a brown speckled, friable wacke, which falling off and washed away by the rain leaves the hard spheroidal nuclei of basalt scattered on the surface; frequently in such numbers as to present the appearance of having being showered down by some volcano. These spheroids, vary in size from a pigeon's egg to a 16 inch shell.

Recent conglomerate.—A few miles to the S. of Sedashipett, a low flat topped range of hills is seen; which, from the calcedonies, jasper and fragments of trap brought down by the nullah, are probably of trap. These transported pebbles have been formed into a solid bed cemented together by lime, and form cliffs from three to ten feet in thickness on the nullah bank. Small rounded fragments of laterite are also included in this recent conglomerate, which is also seen in the beds of other rivulets between Moonapilly and Beder. These conglomerates rarely extend more than 20 or 30 yards from the present channels of the streams, and generally not above several feet. The lime contained in the water of the stream, and its tributary springs, has evidently assisted in the consolidation.

About four or five miles S.W. from Moonapilly, the low range of hills there seen was found to be of trap; the highest peak capped by a lateritic rock resembling that of Hor Muth S. of Bijopore described pp. 6 and 7 No. 2 Geological notes. This laterite near its junction with the trap passes into a bed of crimson-spotted, lithomargic earth resembling that of the Nilgherries, and is slightly impregnated with calcareous matter. The trap occupies the lowest situations, and constitutes the basis of the plain to Beder, where it is overlain by an extensive bed of laterite 200 feet thick.

Laterite bed of Beder.—The laterite bed of Beder commences about 16 miles ESE. from that city ; it is first seen resting on the trap in a bed about 100 feet thick, forming a hill, shaped like a truncated cone, about two miles SW. from the village of Sungum. Thence it continues capping the trap with little interruption, and forming the surface rock of the level and extensive tract of table land on which the city of Beder stands. The laterite bed terminates to the west about 12 miles WNW. from Beder, descending to the plain by a short, but steep declivity and at its basis the trap is again seen. It is about 28 miles in extent from ESE. to WNW. and about 22 miles, from WSW. to ENE. Its average thickness is about 100 feet, and maximum 200 feet ; it rises from the trap of the plain in abrupt, and sometimes precipitous acclivities. The cliffs supporting this table land of laterite on the northern and eastern sides, are from 100 to 200 feet high, but much lower and less abrupt on the W. side where the general level of the country appears to rise. The general direction of the cliff line, marking the termination of the bed near Beder, is E. by S. but the outline is irregular, the cliffs forming salient and re-entering angles.

The plain on the summit is almost one monotonous level, and less broken by nullahs than is generally the case on table lands. This appears in part owing to the rain water being mostly drained off through the porous structure of the rock before it has time to collect.

The height of this table land above the sea, as barometrically taken by Voysey, is 2359 feet, about 200 feet lower than the indications afforded me by means of the boiling point of water. Sheets of bare laterite impart a barren appearance to portions of its surface. The soil resulting from the disintegration of the laterite, is brown or reddish, gravelly or pulverulent, according to the varying petrographical structure of the parts of the rock of which it is composed. The soil formed from the dark and silicious varieties is usually sterile, but that from the softer and more argillaceous varieties is carefully cultivated, producing abundant *mungárí*, or early crops. The yellow *juare* and *bajra* grown on it are said by natives to be sweeter than those produced by any other soils. It seems probable that among other causes of the sterility for which lateritic soils have been abused may be ranked that of the porous character of the laterite when it forms the substratum which carries

offt he water, particularly from the loose siliceous varieties of the soil, before it has had time to fertilize the surface. In the more clayey kinds of the soil the water is longer retained. In the immediate vicinity of Beder the soil does not lie thick, and the trees have a stunted appearance, particularly the mango trees that shade most of the Mausolea and Tombs in the precincts. Wherever there is a sufficient depth of soil and capability of retention of moisture, its chemical nature is certainly not against arboreous vegetation as the picturesque banyan tree, in front of the cavern spring in the *Farabagh* can testify. On the summit of the table land, a few narrow belts of the *regur* occur outcropping from the alluvium, Voysey counted four well defined zones of the cotton soil on this elevated insulation, between Beder and Shela-pilly, running N. and S. and lying between ridges of laterite, termed by him "Iron clay." The fact of its being thus found on the tops of hills, and covering the bottoms of valleys and plains, at a distance from any river's course, and out of the reach of present inundations, militates strongly against the theory of the *regur* being a fluviatile deposit as thought by some.

The principal wild shrubs growing in the lateritic soil on the surface are the *Pulas*, the *Kutlungi*, or *Chungu Cheltu*; the *Cassia auriculata*, the *Anona squamosa*, *Asclepias gigantea*, the *Bair*, (*Zizphus Jujuba*) the *Acacia*, the *cara thorn*, and the small leaved *Burratiri*.

Petrographical character of the Beder Laterite.

The laterite of Beder, generally speaking, is a purplish or brick-red, porous rock, passing into liver brown perforated by numerous sinuous and tortuous tubular cavities either empty, filled, or partially filled with a greyish-white clay passing into an ochreous, reddish and yellowish brown dust; or with a lilac tinted lithomargic earth. The sides of the cavities are usually ferruginous and often of a deep brown or chocolate colour: though generally not more than a line or two in thickness, their laminar structure may frequently be distinguished by the naked eye. Before the blow-pipe it melts into a black clay attracted by the magnet, but is rarely so ferruginous as to entitle it to the character of an ore of iron; though some of the nodules are picked out, and smelted by the natives. The interior of the cavities has usually a smooth polished superficies, but sometimes mammillary, and

stalactiform on a minute scale. The hardest varieties of the rock are the darkest coloured, and most ferruginous. The surface masses of the softer kinds present a variegated appearance. The clay and lithomarge exhibit lively coloured patches of yellow, lilac, and white, intersected by a network of red, purple, or brown. The softness of this rock is such that it may be cut with a spade; hardening by exposure to the sun and air, like the laterite of Malabar. The surface of the harder or more ferruginous varieties is usually barren, flat like a pavement and often presents a glazed or semi-vitrified appearance. The debris of this rock washed from its surface by the rains is often seen accumulating in low situations, and reconsolidating into a nodular conglomerate; when the fragments of the laterite have been much rolled they assimilate externally to pisiform iron ore, but have neither its specific gravity, internal concentric structure, nor distinguishing lustre. The felspathic cement agglutinating these nodules is often of a deep brown colour, passing into various lighter shades according to the quantity of iron it contains, and is evidently composed of the more powdery parts of the parent rock: this alluvial laterite is seen in all lateritic areas in the S. of India and is as easily to be distinguished by its nodular and pisiform character, its position, and the thinness of its beds from the true laterite, as the reconsolidated debris of quartz, mica, and felspar is from the true granite rocks, at the bases of which it is often seen, in India, to accumulate in beds of some thickness and tenacity. In tracts where kunkur and limestone prevail, as near Bejapore and Bangwari, the lime often enters into the cement of this lateritic alluvial conglomerate.

Sections of the laterite presented by the cliffs and wells of Beder.

In the sections afforded by the faces of the cliffs and deep wells of Beder the laterite sometimes presents a homogeneous cellular structure from summit to base. Generally speaking however, it becomes softer and more sectile as it descends; and the cavities in the lower portions are better filled than those higher up. This may be attributed in some measure to the action of the rain, which falling on the surface percolates through the cavities of the upper portions of the rock carrying downwards much of the ochreous and lithomargic earths they contain until at length the cavities of the lower parts of the rock be-

come so full that they form an impervious bed where the water collects in hollows and cavities. Here it accumulates until it either trickles through the passes of the side of the cliff, or finds its way out by some of the nearly horizontal joints that intersect the rock. Such are the sources of the shallower wells and springs observed in the substance of laterite rocks. The deeper wells and springs are usually found at its basis where it rests upon the impervious trap. Near the line of junction the trap is almost invariably observed to be in a state of disintegration either as a friable wacke, or as a brownish or greenish grey clay. The laterite is no longer hard or porous; its cavities are broken up or filled with lithomarge and ochreous earth; and in short, it presents a dense bed of clay variegated with shades of purple, red, yellow, and white. This clayey state of disintegration of both rocks is ascribable chiefly to the collection here of the percolated water from above. The line of demarcation between the two rocks is not easy to distinguish as the clays are intermixed by the water; that of the trap is easily to be distinguished at a little distance from the contact by its greenish hue, and soapy feel, that of the laterite is often meagre to the touch, and either white, or tinged of various shades by iron. The disintegration of the trap rock rarely extends more than four or five feet below the junction.

The tubular cavities in the laterite have not unfrequently a horizontal direction; and, where numerous, impart a somewhat laminar structure to the rock. They are observed to be most numerous where the water, obstructed from passing lower down, is compelled to find its way to the sides of the cliffs; empty sinous tubes having a general vertical direction are also observed varying from a few lines to one or two inches in diameter passing through the rock, one was traced 30 feet until it disappeared in a projecting portion of the cliff. These cavities are sometimes lined with drusy crystals of quartz. The surface of the interior is generally ferruginous and shining, and sometimes mammillary and stalactiform *veins of manganese in the laterite*. I am not aware that any writer on laterite has noticed the occurrence of veins of manganese associated with oxide of iron in this singular rock, a mineral which has probably afforded the beautiful lilac colour seen in its lithomargic earth.

At the western base of the cliffs; about 16 miles W. by N. from

Beder and $1\frac{1}{2}$ mile from the village of Hulfergah, on the left of the road leading down from the table land into the plain, the laterite is seen penetrated by a great number of veins, which at first sight, from their dark aspect and singular direction, might be taken for those of basalt. They are composed of black, often earthy manganese, combined with iron. The veins are extremely tortuous, and crossing each other in every direction, and give a reticulated appearance to the rock. On the sides of these veins the laterite is so hard as to stand out in relief from the weathered portions of the rock. The veins are usually thicker near the bottom of the cliff, fining off as they ascend until they are gradually lost in the substance of the laterite: others are horizontal. As they diminish from an inch to a line in thickness, they gradually lose the deep bluish black colour, becoming mixed with the matter of the matrix, and pass into a brown, yellowish brown, and lastly, a purplish thread which is lost in the substance of the rock.

The bluish black substance of the veins is compact and hard, in some parts; sectile and earthy in others, easily frangible. Before the blow pipe, *per se*, it is converted into a black slag affected by the magnet; with borax it fuses into a bead of amethyst coloured glass.

The indurated sides of the veins are of a mottled reddish grey colour, resembling indurated lithomarge: portions of the greyish-white clay in their vicinity acquire an almost vitreous hardness and a cellular fritty aspect, a dull greenish enamel lines most of the cavities in the laterite: the lithomarge is slightly indurated. The fritty parts of the rock exhibit traces of calcareous infiltration. The greyish white clay fuses into a greenish enamel similar to that lining the cavities. The pure lithomarge undergoes little alteration, before the blow pipe; does not fuse but becomes indurated, darker and more mottled. The impure varieties exhibit in the reducing flame, minute greenish globules.

The lithomarge, and the greyish white, and coloured clays, all emit air bubbles, when placed in water, they also slightly decrepitate but do not fall to pieces; with water they form a plastic clay. The purer varieties of lithomarge are little adhesive, feel meagre; the streak and fracture is earthy: that of the white clays shining, feel slightly greasy to the touch.

It must not remain unnoticed that near at the base of the laterite cliff, in which the manganese veins just described occur, runs a dyke of compact and exceedingly tough basalt, occupying the space of a few

yards in breadth between the laterite and the trap of the plain. There I was unable to discover any veins of manganese either in the latter or the basalt.

The basalt of this dyke is seen, in the bank of an adjoining nullah, to assume both the globular and columnar structure.

Valley of denudation.—At the N. E. extremity of the cliffs of Beder an instructive example of a valley of denudation and excavation about a mile in breadth is afforded, of which the following is a Section. It shows at the same time the immediate superposition of the laterite on the overlying trap of the Deccan. (*Plate Diagram No. II.*)

A. A. Are cliffs of laterite from 120 feet to 90 feet high once evidently a continuous bed over B. B. B. sheeted trap and amygdaloid, and occupying C. C. The space D. D. hard ferruginous masses of laterite. Though evidently much waterworn and disrupted, they have successfully maintained their position against the transporting effects of the stream, which not only stripped off the laterite and denuded the subjacent trap, but excavated the latter to the depth of many feet having the hard mass *Ba.* in the centre, and the valley of denudation, and excavation D. D.

This valley runs E. by S. and over the plain at its eastern extremity are scattered the harder nodular fragments of the stripped laterite mingled with regur, and the recent lateritic alluvium of the adjacent cliffs.

Economical uses of the laterite of Beder.—The laterite, particularly its closer varieties, has been largely used in building the city walls; in the revetements of its ditches, wells &c. and in the construction of the more common cemeteries. The principal edifices, walls, and bastions of the fortress are of the trap. The laterite quarries of Beder resemble those on the coast of Malabar and Canara, but are deeper in consequence of the sectile beds, which are usually preferred, lying deeper below the surface than in Malabar, where the far greater moisture of the atmosphere may have some effect in preserving the moisture and sectility of the upper parts of the rock. Both rocks harden on exposure to the air. There is little appearance of stratification in the cliffs; and on the other hand, no tendency to a prismatic, columnar, or globular structure. The rock has much the appearance of those enormously thick bedded sandstones, where in cliffs even of 200 feet high there is no

alternation of other beds, and the rock appears one unstratiform trap often cleft by vertical fissures, into columns and pinnacles.

I have dwelt longer upon the subject of the Beder laterite, than it at first sight might appear to merit, but I may plead in extenuation that it is the first bed seen, beyond the granitic and hypogene area, resting on the overlying trap (a rock and the nature of the rock on which it rested had been differently stated by Malcolmson and Voysey, by the former as granite, the question however by this visit has been set at rest for ever), which probably belongs to the tertiary period. Calder to whom we are indebted for the only general view of Indian geology hitherto published, and whose ideas have been quoted by some eminent European geologists, terms laterite "a contemporaneous rock associating with trap, and commencing only where the overlying trap ends, a little to the N. of Bankote, or Fort Victoria, and thence covering the primitive rocks of the Ghauts and W. coast to Cape Comorin". Now the laterite of Beder, and many other localities, some of which will be described in the course of this paper, lies beyond the area of the rocks termed primitive by Mr. Calder, and rests upon the overlying trap; it has never been observed underlying or alternating with it, therefore the only proofs available, viz. that of superposition and non-alteration, tend to prove its more recent and non-contemporaneous origin; a point of great importance. The existence in it of veins of manganese and of large beds of the same mineral I afterwards discovered in the laterite area capping the granitic and hypogene rocks of the Kupputgode range in the S. Mahratta country are remarkable facts worthy of note, for until we find beds and veins of this mineral in the granitic and trappean rocks underlying the laterite we must be slow to admit the theory, advocated by several geologists, of the latter being nothing more than the result of the recent disintegration of the former rocks *in situ*. The beds of lignite discovered by General Cullen and myself in the laterite of Malabar and Travancore, and the deposits of petrified wood in the red hills of Pondicherry in a rock which though differing in structure, I consider as identical in age with the laterite, and other facts too long for enumeration here point rather to its detrital origin, like sandstones. I do not ever recollect having seen in the laterite resting on the overlying trap any fragments of the calcedonies or zeolites that often so greatly abound in the rock immediately below it, a fact which

while decisive against the decomposition *in situ* theory, would lead us to the inference that the laterite owed its origin to the detritus of other rocks than the overlying trap.

Laterite by many geologists in Europe is supposed only to fringe our coasts, and exist as a thin cap on the ghaut summits; every day however is adding to our knowledge of its extent in the interior of the peninsula, and it is evident not only that it must have covered it formerly to a much greater extent than at present; but that it has since been much broken up by the subsequent denudation of which on the small scale, Beder affords a specimen (*vide section.*) The effects of this denudation however, are visible on the grand scale in the interior of S. India, where the tops of mountains of granite, hypogene rocks, and sandstone many miles asunder are seen capped with laterite in almost horizontal beds, and little or no laterite in the intervening plains and valleys. As in Mac Culloch's description of the great denudation of the red sandstone on the N. W. coast of Ross-shire. It is impossible to compare these scattered and detached portions without imagining that the whole intervening country has once been covered with a great body of laterite, enormous masses of which have been removed by denudation. The same remarks might be applied with some modification to the subjacent sandstone. Some fragments of this great denudation may be recognized in the laterite gravel and clay which overspreads the surface of many parts of the country, and which when reconsolidated it is often difficult to distinguish from the true laterite, from which it has been derived and for which it has often been mistaken.

From Beder to Calliany, Trap and Laterite.

It is now time to resume our journey towards the old Jain city of Calliany, more lately the Metropolis of the* Kings, a provincial city under Aurungzebe and now under the Nizam.

From the foot of the cliffs of Beder, a plain, based on trap amygdaloid abounding with calcedonies, zeolites, and calc spar, broken only by a few slight undulations, extends to Calliany near which the surface undergoes a gentle but considerable ascent, a few belts of the reconsolidated laterite gravel just described cross the road resting on the trap, and are evidently derived from some high laterite cliffs to the W. and N. of the city to which I traced the debris. On one of these

* MSS. illegible.

heights stood a few denuded laterite cliffs about 20 or 30 feet high, insulated from each other by spaces 4 or 5 feet wide and resembling those already delineated in the Beder valley section. A piece of calcedony was picked up in the gravel but none could be discovered in the unfractured laterite. The trap, in the form of wacke, here underlies both the laterite and its detritus; the line of demarcation is perfectly defined and distinct.

Bazaar excavated in the Laterite cliffs of Calliany.

Nearer Calliany the bed of laterite gravel is succeeded by laterite, which forms a low ridge of hills immediately to the West of the town. A street has been cut from the rock, running along the side, about midway up the ascent, in the scarp of which a long row of now deserted houses and shops have been excavated, and also small caves supported by pillars of the laterite left untouched, while excavating. The bases of the cliffs in the vicinity are quarried for the softer variety of the laterite, which is carried off in baskets, ground with water into a plastic clay, and used as a water proof covering to the tops of the flat roofed houses of Calliany. The laterite is here called by the natives from its worm-eaten appearance *kire ka putthur*, or *silika putthur*. The Tamuls call it *chori kulloo*, *vettic* and *culloo* and on the Malabar coast it is termed *stika culloo*.

The wells here are of considerable depth. The temp. of one, 35 feet to the surface of the water was $78^{\circ} 5'$ —Temp. of air in shade, 89° ; the boiling point of water $206^{\circ} 5'$ —Temp. of air 84° .

The soil between Beder and Calliany is principally lateritic mixed with the detritus of the subjacent trap crossed in a few situations by zones of *regur*, often blended with the trap and laterite soils, the low flat-topped hills avoided by the route appear to be of laterite resting on the trap.

From Calliany to Gulburgah.

The laterite continues from Calliany to a few miles beyond Murbi, a distance of about 15 miles, forming long flat-topped ranges of hills rising about 100 feet above the general level of the table land, and running E. S. E. They are separated by narrow flattish valleys having a similar direction to that of the hills, and to that of the wider valley

separating the Beder and Calliany laterite cliffs : they present the usual appearances of vallies of denudation, and in many places the trap and amygdaloid underlying the laterite have been exposed.

At Murbi the laterite table land of Calliany is descended to a terrace or step of comparatively level land, where the trap and its associated wacke, amygdaloids and kunker, are the only rocks met with. A little N. of Gulburgah another terrace formed by these rocks, is descended to the still lower level on which the city stands in the valley of the Bhima, about 12 or 14 miles to the N. of the present channel of this fine river. About 10 miles S. of the city, beds of limestone outcrop from the trap between the villages of Nundipoor and Sinnoor, and continue forming the bed of the Bhima at Firozabad, dipping slightly towards the S. W. The limestone continues on the opposite or S. bank of the river about 4 miles, a little to the N. E. of the village of Gownully, where it is again overlaid by the trap. (*Plate Diagram No. III.*) is a rough section from the table land of Calliany to the S. bank of the Bhima, comprehending a tract of land about 50 miles N. and S. exhibiting extensive denudation ; both laterite and trap having been stripped off the subjacent limestone exposed in the valley of the Bhima. On the South side of the valley the trap re-appears, but the softer laterite has been entirely swept away.

A. Laterite.

B. B. Trap once forming
a continuous sheet.

C. Limestone.

} Rolled and waterworn fragments of the trap occur in, and on, the soil and gravel overlying the limestone, at a distance of two or three miles from the present channel of the river, and far above the reach of its highest floods. The traces have all the appearance of having been formed by the action of water.

Iron smelting at Murbi.

It must not be omitted to mention that at Murbi, near the edge of the Calliany table land, and the adjacent village of Boghirry, the more ferruginous nodules occurring in the laterite are collected, roasted, coarsely pounded, and smelted. The furnace at Murbi is a small one, and capable of smelting about one *Kucha* maund of 12 seers per diem. The ore is subjected three times to the action of the fire ; twice to reduce it and cleanse it from dross by beating the half molten mass

with heavy hammers; and the third time to form it into bars, and other forms convenient for agricultural implements; which are sent to Gulbergah, and Calliany. These markets are also supplied with iron from Mogumpilly in the Koil Talook. The ore, which is in the form of nodules, often exhibits, on fractured surfaces, stripes of hæmatic red earthy ore, alternating with others of a metallic iron blue. It is sold by the people who collect it to the iron contractor on the spot at the rate of $3\frac{1}{2}$ Hyderabad rupees the Kucha maund of 12 seers.

Lithologic character of the Firozabad limestone and Traps.—The denuded limestone, in lithologic character, closely resembles that of Kuddapah, Kumool, Warapilly and Talicota, no fossils were found in it. The prevailing tint is a greyish blue, strings of small spherical cavities occur in it as in the limestones just alluded to, some empty, others filled with a brown ferruginous dust.

The trap has often a porphyritic structure, imbedding crystals of a dull olive green mineral, which in disintegration assume a greenish-brown tinge, and finally fall out, leaving cavities in the rock. They are not unlike some varieties of olivine, a mineral occasionally seen in this trap; a great development of kunker is observed in its fissures previous to coming on the outcropping of the limestone.

The Bhima River.—The Bhima is about 600 yards in apparent breadth at Firozabad, its temp. 78° Faht. temp. of air 90° . Approximate height of bed above sea by boiling point 1730 ft. The waters were swollen and muddy from the Monsoon rains (June) and running at the rate of $2\frac{1}{2}$ feet per second. A tumblerful of the water deposited about $\frac{1}{12}$ * its bulk of a fine reddish brown sediment, which effervesced with dilute sulphuric acid, evidently the debris of the trap, amygdaloids and limestone rocks, over which it passes. The banks are shelving, and composed of the laminar greyish blue laminar limestone covered with silt and *regur*, and their surface strewed to a considerable distance on either side with rolled fragments of agates, calcedonies &c. marking the extent of the floods.

The bed has been hollowed in the limestone, exposing shelving surfaces of the rock, in some places perfectly bare, others covered with silt or a gravel from the size of a pea to that of an egg, fragments of trap, and limestone, calcedonies, jasper, and agates. In consequence of the

* So in MSS.

disorders committed by the irregular Arab soldiery, the town of Firozabad had been almost deserted: and the *ambikars* with their basket boats had quitted the ferry which was now unfordable and the water running with considerable rapidity. The village people collected a number of pumpkins, and about noon they succeeded in netting these together and constructing a tolerable raft, with which the stream was easily crossed.

The sources of this fine river rise in the western ghats a little to the N. and S. of Poonah; after watering the fertile plains of the country of the Marhattas, where its banks are famous for the breed of horses and mares from which the hardy cavalry of this warlike race has been chiefly supplied, and flowing S. Easterly towards the Bay of Bengal over the almost continuous sheet of the great overlying trap formation of the Deccan, it joins the Kistnah on the granite and hypogene area of Hyderabad about 50 miles direct distance S. E. from Firozabad. It contributes to the Kistnah many of the *Pietri duri* of the overlying trap formation that are rolled along its bed over more than half the peninsula.

Trap Formation from the right bank of the Bhima to the laterite of Inglisswara.

The trap again covers the limestone a little to the N.E. of the village of Gonnully, about 4 miles from the river: the latter rock is seen outcropping for the last time at the base of a low hill of trap between Gowncolly and Sunnoo. The trap is amygdaloidal, veined with kunker, and imbedding calcedonies and calc spar.

From Sunnoo to Jyattaky the calcedony is seen both in veins and nodules, and passes into plasma; the colour varies from the lightest tinge of apple green to the deep hue of heliotrope into which it passes; in some translucent varieties the colouring matter is disposed in delicate moss-like filaments, the colouring matter of the plasma has not been exactly ascertained by chemists, but it seems to be similar to that of the heliotrope, both disappearing before the blow-pipe.* The colour of this variety of plasma when exposed to the reducing flame changes to a purplish white, the plasma becoming opaque and easily frangible. I have little doubt that the red spots of the variety of Calce-

* Perhaps silicate of Iron? that of Heliotrope being the red oxide?—Eds.

dony termed heliotrope are derived from thin beds of fine bright red bole which are often seen alternating with the trap, and in nests, in this vicinity.

The surface of the country to Sindaghi presents the long, low, flat, step-like elevations of trap, separated by plains along which the route lies, and running in a S.E. direction. The soil is usually the detritus of the trap and laterite in belts and patches of a grey colour, and dark red, sometimes sandy; the vegetation stunted consisting chiefly of the *Acacias* the *Cassia Auriculata* and *Hingun* thorn. On a fallen blighted acacia amid the low jungle I observed a chameleon perched motionless, with his head erect and jaws wide open, as if indeed making a meal of the afternoon breeze. His skin, which mimics the prevailing hues of surrounding objects; blue when basking beneath a cloudless sky, and emerald when shaded by the forest's verdure, had here so strongly assimilated that of the black and ashy white stem on which he lay, that at first I thought it was a singular excrescence of the wood itself.

A little to the N. W. of Sindaghi the summit of a ridge is observed covered with globular masses of a compact basaltic trap, underlain by a bed of the fine red clay imbedding a profusion of Zeolites, also heliotrope, plasma, geodes of calcedony lined with quartz, crystals, semiopal, cacholong agate, and calc spar, resting on a greenish grey wacke. Both rocks are veined and interstratified with Kunker of a somewhat cancellar structure. The horizontal layers of Kunker are often from 10 to 12 inches thick. The softer wacke and amygdaloid, in weathering often leaves the harder layers of Kunker projecting from the surface. (*Plate Diagram No. V.*)

A Globular basaltic trap. B Red amygdaloid. C kunker layer. B red amygdaloid. C Kunker layer, D Wacke.

From Sindaghi by Ipperghi to Ingleswara, the aspect of the country is much the same as from the Bhima to Sindaghi, but the plains become flatter, more extensive, and more intersected by nullahs. At Ipperghi the trap assumes the rich brownish purple or chocolate hue of the trap of Bejapore, and is seen in the bed of the rivulet resting on a beautiful red zeolitic amygdaloid: the line of contact is marked and distinct: heliotrope and plasma are less common here.

Indications of the laterite are perceived before reaching Ingleswara in beds of its detritus re-cemented by a brown ferruginous and calcareous paste, also fragments of chert and a variety of limestone por-

phyry. As anticipated, the laterite was found capping a ridge of trap and wacke a little to the S. W. of Ingleswara presenting a similar development of the lithomarge near the line of contact with the trap as observed at Beder. The latter rock passes into a friable greenish wacke, and also into a dark amygdaloid containing spheroidal cavities, often filled or lined with green earth.

The hill of Ingleswara, marked by an old tower, is principally composed of wacke penetrated by flattish, apparently compressed, veins of fibrous arragonite. On the top of the hill are scattered globular and angular fragments of basaltic trap; while partially imbedded in the soil covering its sides, are rough, scabrous-looking blocks of a light coloured rock, resembling altered limestone passing into chert. These blocks are mostly angular, from generally 6 inches to two feet thick, have a whitish exterior so rough in aspect and touch as, in these respects, to resemble trachyte, and when fractured the small glistening, red, and white calcareous crystals they imbed, might at first sight be taken for those of glassy felspar. The softer and more crystalline portions of this singular rock effervesce with acids. It occurs also, in detached blocks, on the wacke at the base of the laterite cliffs S. W. of Ingleswara. The rock here is more compact, homogeneous, less crystalline in structure and exhibits dark dendritic delineations. Some fragments are partly coated with a thin bluish white enamel, which is apt to assume a botryoidal form; on its surface are seen numerous small white globules of white enamel. Among the lateritic debris intermingled with these blocks are interspersed numerous nodules of a black cineritious looking mineral, containing cavities filled with an impure, earthy, brown manganese; their black outer crust is often so indurated as to give fire with steel. Before the blowpipe, *per se* it reddens slightly and exhibits minute globules of a bluish white enamel.

The following section will exhibit the position of these blocks of cherty limestone as they occur on the sides of a valley of denudation and excavation, a mile in width. (*Plate Diagram No. IV.*)

A. Laterite, overlying trap at B. and stripped off at E and B. b.

B. B. b. Trap.

C. Globular basaltic trap.

D. D. Blocks of whitish scabrous limestone passing into dust and half imbedded in lateritic gravel.

E. Valley of denudation and excavation.

The Limestone has very much the appearance of the freshwater limestone of Nirmul, Moonapilly, and Koolkonda between Gulberga and Muctul, and has evidently been broken up and altered by the basalt. The angularity of the fragments and their little waterworn appearance, prove that this bed must have been deposited, and existed *in situ*, at no great distance from the present locality. The blocks were not observed in the centre of the valley, from which it may be inferred that the limestone was only a littoral deposit, or that its fragments were carried away by the aqueous current by which the valley was excavated. The laterite cliffs of Ingleswara like those of Beder, Sundur, and on the western coast, are cavernous: one of the caves near the summit, is held sacred by the Hindoos. The entrance was barred by a locked gate; it is said by the natives (*credat Judæus*) to communicate with another similar cavern on the hill of Nageswar, also said to be of laterite, about three coss to the S. W. Near the mouth is one of those remnants of the strange ophitic adoration that prevailed over great part of S. India, in the shape of an image, of which the upper portions resemble those of a young female, and the lower terminating in the coils of a serpent.* Ingleswara is famed in Hindoo annals as the place where the nuptials of Buswapa the founder of the great sect of Jungums and Singayets, and the overthrower of the Jain dynasty of Calliany, were celebrated. The small laterite hill of *Hori muth* his birth place, is at a little distance.

From Ingleswara to about 11 miles S. W. of Bagwari, trap, wacke and amygdaloid form the basis of the plain where its southern limit is again crossed to the hypogene area. A reddish felspathic zone, similar to that already noticed in the Bejapore notes, intervenes between the trap and the gneiss, which is first seen to outcrop in the bed of a nullah between the villages of Hungraghi and Wondal, where a section is afforded showing the thinned-out edges of this great coulé of trap resting on and coating the reddish intervening felspar zone. This zone, or *salbande*, is probably nothing more than the altered gneiss.

The mica in the gneiss is replaced by hornblende and at a little distance, the gneiss passes into hornblende schist. Both rocks are highly inclined, dipping westerly; gneiss, felspathic veined and interspersed

* We have in the Museum a *double* image of this kind formed by two female busts with serpent terminations.—Eds.

with quartz continues to the left or N. bank of the Kistnah to Chimlaghi where it disappears under beds of a bluish limestone resembling that of Firozabad. The gneiss is in some situations capped by laterite fragments of a greyish blue and buff limestone; the latter crystalline and effervescing feebly with acids, and penetrated by tortuous veins of the dark chert. A few globular boulders of granite and greenstone are scattered over the low hill of Chimlaghi, out of the reach of the floods of the Kistnah. They have a rugged waterworn exterior. The hill itself is capped with a layer of kunker, varying in thickness from a few inches to five feet, imbedding nodules of a ferruginous clay and angular fragments of a grey and dark coloured chert, a bed of which is seen intervening between the limestone and the gneiss. The kunker bed rests upon disturbed strata of the bluish limestone, so much broken up that it was impossible to ascertain the dip, or direction of the rock. The gneiss underlying the limestone imbeds crystals of calc spar.

From the junction of the Kistnah, and the Gutpurba near Chimlaghi, by Kulladghi, to the West of the falls of Gokauk on the eastern flank of the Western Ghauts a limestone and sandstone formation supposed to be identical with those of Cuddapah and Warapilly, extends, with partial outcroppings of the hypogenes, and a few patches of overlying trap and laterite. The nature of the rocks composing the summits of the Ghauts immediately behind the falls of Gokauk have not been noticed. A little further south they are composed of the hypogene schists and granitic rocks covered, partially, to the Sea at Goa, Vingorla and Malwan by laterite. North of Malwan the overlying trap is almost the exclusive rock seen to Suraj. Of the geology of the Southern Mahratta country I intend speaking more fully in a subsequent paper.

Proceedings of the Asiatic Society for the month of JULY, 1844.

Wednesday Evening, 3rd JULY, 1844.

The stated Monthly Meeting of the Society was held at the Society's Rooms at half-past 8 P. M.

The following list of Books presented and purchased was read:—

Books received for the Meeting of the Asiatic Society, July 3, 1844.

- The Penny Cyclopaedia, Vols. 25, 26 for 1843, and Vol. 27 for 1844.—Purchased.
Transactions of the Society of Arts, &c.—Presented by the Society.
The Edinburgh New Philosophical Journal for October 1842 to January 1844.—Presented by the Editor.
Estado de las Islas Filipinas, Vol. 2, 1844.—Presented by the Author.
Mémoire sur l'Idéographie, par Don Sinibaldo de Mas, Pamphlet.—Presented by the Author.
Vocabulaire l'Idéographique Français, &c. by D. D. Pamphlet.—Presented by D. D.
Sketch of the System of Education in Practice at Bruce-Castle School, Tottenham, London.—Presented by Mr. H. Piddington on the part of the Proprietor.
The Oriental Christian Spectator.—Presented by the Publisher.
Calcutta Christian Observer for June 1844, 2 vols.—Presented by the Publisher.
Journal of the Agricultural and Horticultural Society of India.—Presented by the Society.
Journal Asiatique, for Sept. and October, 1843.—Presented by the Editors.
Journal des Savants, Nov. 1843.—Purchased.
The London, Edinburgh, and Dublin Philosophical Magazine, Nos. 154, 155 and 156.—Presented by the Editor.
Proceedings of the Geological Society of London, Nos. 95 and 96.—Presented by the Society.
The Athenæum for April 6th, 13th, 20th and 27th.—Purchased.
The Meteorological Register for May 1844.—From the Surveyor General's Office.

Read the following letter from the Curator Museum of Economic Geology and Geological and Mineralogical Departments:—

H. TORRENS, Esq. *Secretary, Asiatic Society, &c. &c. &c.*

SIR,—I beg to report for your information, that we have received from Government but a part of our Indent for apparatus and re-agents for the use of the Museum of

Economic Geology, and that it will remain with the Society to consider how the remainder can be supplied.

In the accompanying lists, which comprise the articles still unprovided, the prices marked are European, converting, as our Calcutta Chemical dealers usually do, shillings into rupees.

The amount of the two lists herewith so calculated, is :—

	Co's. Rs.
Purchases from European shops, or to be obtained from Europe,..	.. 392 8 0
Bazar purchases, .. .. .	.. 12 8 0
	<hr/>
	Co's. Rs. 405 0 0
	Say Co's. Rs. 400 0 0

But of this first, a part of the Indent can be reduced or dispensed with at present.

2. A part is probably not procurable here, except perhaps at a price which should not be paid unless the object was indispensably required.

3. A part may be obtained at lower prices, and a part I can present to the Laboratory from my own stock of apparatus and re-agents.

Altogether then, I should hope, that with a gradual outlay of at most Co's. Rs. 250, I shall be able to manage for a considerable time, but this outlay is really requisite; because in a Laboratory the better it is furnished, the faster the work can be carried on; and the delays of preparing or even of purchasing apparatus or re-agents at the time when wanted, even if they are then obtainable, are most wasteful and discouraging.

I should not forget, Sir, to remind you, that of the Government allowance for contingencies of the Museum, whatever can be saved, I am applying gradually to the purchase of the necessary books, and that the Laboratory serves both the Society's own departments of Geology and Mineralogy as well as the Museum of Economic Geology.

I am, Sir,

Your obedient Servant,

Calcutta, the 3rd July, 1844.

HENRY PIDDINGTON,
Curator Museum Economic Geology,
and Geological and Mineralogical Department.

Resolved.—That the necessary purchases for the Laboratory as explained in the lists accompanying the letter,* be authorized to the amount stated.

Read the following Letters from Messrs. W. and H. Allen and Co., the Society's Booksellers and Agents :—

HENRY PIDDINGTON, Esq. *Assistant Secretary to the Asiatic Society.*

SIR,—We have to acknowledge the receipt of your letter of the 17th February, enclosing letters for the Vice-Chancellors of the Universities of Oxford and Cambridge,

* Which it is not worth while to print.

and likewise for Trinity College, Dublin. They have been delivered, and we have acknowledgments for the same.

The "*Britannia*," has arrived, and the six cases of Books consigned to us by her, shall be delivered agreeable to the instructions contained in Mr. Torrens' letter on the subject.

London, 29th April, 1844.

We are, Sir,
Your faithful servants,
WM. H. ALLEN & Co.

HENRY TORRENS, Esq. *V. P. and Secretary to the Asiatic Society of Bengal.*

SIR,—We have the honor to acknowledge the receipt of your esteemed favor, dated the 7th March, which reached us this morning.

We shall have much pleasure in making the arrangement you desire, with an eminent Sculptor, for the execution of a Bust of Bryan H. Hodgson, Esq. We shall make a point of seeing Mr. Hodgson soon after his arrival. You may assure the President and Members of your Society, that our best attention is at all times given to their commands. We shall address you again on the subject as soon as a Sculptor has been decided upon.

London, 6th May, 1844.

We are, Sir,
Your most obedient servants,
WM. H. ALLEN & Co.

The Secretary stated, that as ordered at the last meeting, the Committee of Papers had been requested to decide on what number of copies of the *Sobda Ratnakar*, by Baboo Goropresad Roy, the Society should itself subscribe for while recommending the work to the favorable notice of Government, and that 25 copies had been determined upon by the Committee. It was finally *Resolved*, that as proposed at the previous meeting, the Society do subscribe as above, and strongly recommend the work to the attention of Government in the Education Department.

Read the following Letter from the Secretary to the Government of India, Secret Department:—

No. 430 of 1844.

From the Secretary to the Government of India, to the Secretary to the Asiatic Society, dated Fort William, the 29th June, 1844.

Foreign Department, Secret.

SIR,—By direction of the Governor General in Council, I have the honor to transmit to you, for such notice as the Society may deem it to merit, the enclosed copy of a report by Major F. Mackeson, C. B., on the Survey of the road from Sirsa to Bahawal-

pore, with remarks on the country traversed, the nature and capabilities of the road, and the effect its opening will have upon different channels of commerce.

I have the honor to be, Sir,

Your most obedient servant,

E. CURRIE,

Secretary to the Government of India.

*Fort William,
the 29th June, 1844.*

Read the following Draft of a Letter to be addressed to Government, soliciting its support for M. Callery's translation of the Great Encyclopedic Dictionary of Kang-Hi:—

TO T. R. DAVIDSON, ESQ. *Officiating Secretary to Government of India, Home Department.*

SIR,—I am directed by the Honorable the President of the Asiatic Society to request, that you will convey to the Right Honorable the Governor General and Council, the earnest recommendation of the Asiatic Society of Bengal, in favor of the Rev. Pere Callery of Macao, now engaged in a translation of the great Chinese Encyclopedic Dictionary of Kang-Hi.

2. An Extract from the Proceedings of the Society of the 6th December 1843, is entered marginally respecting the undertaking of this great work, and the support which the Society has itself endeavoured to afford to its able and energetic projector. I have also to request, that you will lay before the Right Honorable the Governor General, the accompanying Prospectus of the work, together with a specimen of the Typographical execution of, more particularly, the Chinese characters occurring in it. The Prospectus is published, it will be observed, in English as well as French.

3. Circumstances have occurred, occasioning a casual delay in making this recommendation; but the Society does not regret this, as the progress of events in China since it took up the intention of addressing Government in behalf of Mons. Callery, has more and more tended to prove the great and all-important advantages to be derived in the intercourse of Englishmen with the Chinese, from a critical knowledge of the niceties of their language, and an intimate acquaintance with their habits, customs and modes of thought.

4. The Society is of opinion, that the creation of a comprehensive book of reference, bearing upon the above heads, would be the truest and best mode of placing such advantages within the reach of Europeans, whom the course of business, or the spirit of enterprise, may lead to the shores of China; and it is by a correct and ample abstract translation of the great Chinese Encyclopedia, that the Society think such a book of reference may be best obtained.

5. It would be a source of infinite gratification to the Society, were it permitted to inform Mons. Callery, that the patronage and support of the Government of British India had been accorded to him; and should the Right Honorable the Governor

General think fit to go even beyond this, and draw the attention of the Home Authorities to the work in question, there is no doubt but that Mons. Callery will have obtained by this double act of kindness, a degree of support of the most valuable nature to his undertaking.

I have, &c.

H. TORRENS,

V. P. and Secretary, Asiatic Society.

Asiatic Society's Rooms, Calcutta, 4th July, 1844.

Read the following Letter from J. Owen, Esq. with the Prospectus to which it refers :—

H. TORRENS, Esq. *Secretary of the Asiatic Society.*

SIR—I have the honor to enclose the Prospectus of a little work nearly ready for the press, illustrative of the customs and habits of that portion of the Hill Tribes bordering on Assam, known as Nagas, drawn up at the suggestion of Major Francis Jenkins, and respectfully solicit the honor of the Society's name heading the subscription list.

Should this work pay its own expenses, I shall afterwards go on with a series describing each tribe separately.

Calcutta, 28th June 1844,

I have the honor to be, Sir,

Your most obedt. servant.

JOHN OWEN.

Extracts from Major Jenkins' Letter.

“From your position you have better opportunities of learning something of the habits, languages, and political divisions of that portion of this people on our N. E. frontier than any other Europeans.

“Should you be willing to adopt this suggestion, I would propose your drawing up a paper for presentation to the Asiatic Society, to whom it would be very acceptable, as it would be a valuable addition to our stock of information of the Border Tribes.”

True Extracts,

Dated Sibpur, 1st February, 1842.

JOHN OWEN.

The Secretary was requested to place himself in communication with Mr. Owen, so as to enable the Society to form some judgment as to the merits of the proposed work.

Read the following Letter from Don Sinibaldo de Mas, in reference to the books named therein :—

Monsieur le Secrétaire.

J'ai l'honneur de vous prier de vouloir bien soumettre à l'examen de l'academie dont vous dirigez les intéressants travaux l'essai ci-joint sur une des plus grandes questions qui puissent occuper l'intelligence humaine. Si je n'avais consulté que mes forces, je n'aurais pas appelé l'attention des corps savans sur un travail trop in-

complet qui ne contient que les premiers éléments d'un système, mais la nature même de la question que j'ai abordée me fait desirer que les idées fondamentales de mon essai soient examinées par des juges compétents.

J'ai aussi l'honneur des vous envoyer deux volumes que j'ai publié dernièrement sur les Isles Philipines. C'est un rapport officiel qui fut écrit pour le gouvernement espagnol.

Je vous prie de me croire, Monsieur, avec la plus haute considération.

Votre très humble serviteur.

Macao, 17 Mai de 1844.

SINIBALDO DE MAS.

The presentation was duly appreciated, and a suitable letter ordered to be addressed to the able authors of the works submitted.

Read the following Letter from the Royal Bavarian Academy of Munich :—

Translation of a German Letter from the Royal Bavarian Academy of Sciences at Munich, to the Asiatic Society of Bengal.

The Royal Bavarian Academy of Sciences at Munich being prompted by the ardent wish to extend their literary communications also to the Asiatic Society of Bengal, with which they have not hitherto been connected, have honored me with the privilege to express their sentiments with regard to this subject. I beg to assure you, that it is as desirable to the Royal Bavarian Academy to lay the results of their own labours before the eminent members of your Society, as to be acquainted, as soon as possible, with those researches, which are made by the Asiatic Society, for the reputation as well of their members, as for the advantage of Science ; while the Royal Bavarian Academy of Sciences will not fail in acquainting you with their transactions by written communications of the Secretaries of the classes, by their Bulletins which form a part of their Journal, published under the title " *Gelehrte Anzeigen*," and by transmitting to you their Essays and their publications, they indulge in the hope to be honored with your communications, and consider an exchange of the larger Memoirs (the series of Dissertations in complete copies,) as especially desirable.

The Royal Bavarian Academy of Sciences would most gladly enter on such an exchange, and have thought proper to state the most convenient mode of their mutual intercourse in the Appendix.

I have the honor to be, &c.

(Signed)

FREYBERG.

It was referred to the Committee of Papers to recommend to the Society, what would be in its opinion the best method of meeting the wishes of the Bavarian Academy.

Read the following Letter from Hugh Cumming, Esq. addressed to the Zoological Curator :—

80, Gower Street, Bedford Square, London, January, 1844.

MY DEAR SIR,—Having been informed by various of your scientific friends here, of your anxious desire of increasing the Museum of the Royal Asiatic Society, I have done myself the pleasure of forwarding by my nephew, Mr. Benson, a collection of land and fresh water Shells from the Philippine Islands, with their names, &c. collected by me there, and which I beg you will favour me by offering to the Society in my name, in exchange for other shells of India.

In the box there are 305 species and varieties, in duplicates and triplicates; to each belongs a number which refers to the accompanying list of names, localities and authors.

I presume from the high standing of the Society, that it has numerous benefactors from the gentlemen who fill the high offices under the Honorable Company, in the various parts of India, and its dependencies.

Although I have upwards of 11,000 species and varieties of Marine and Land Shells in my cabinet, I do not possess more than 10 or 12 species of land or fresh water shells that have been collected under the dominion of the Honorable East India Company.

If the Society have any duplicates of either land or fresh-water shells, which could be given to me in exchange, I should feel most obliged, and if the Society have but few species, it can make up to me in quantity in lieu of quality. I should also feel particularly obliged by the specimens being good and live ones. By this means I shall be able to make exchanges with my friends, with those which I shall not require for my own cabinet; for the collectors in England are very poor in true Indian land or fresh-water shells.

Should it lay in my power to assist the Society by further adding to its desiderata, I shall be most happy to do it.

At Mr. Reeve's request, I have sent the twelve first parts of his *Conchologia Iconica*, which work he began to publish last January, and as it is by far the most useful and complete work that has ever been published, and also executed in the first style; may I beg you to procure the Society's name, as a subscriber to it. The parts now sent can be kept, and the succeeding monthly parts can be received by the Society's bookseller in London. The money for those now sent can be paid by a bill on London.

Mr. George B. Sowerby, Junior, has also requested me to send his *Thesaurus Conchyliorum*, of which three parts have been published, and the fourth will be out on February 1st. I presume from the style of both works, that the Society will be much pleased with them. All the figures of both works are drawn and coloured by George B. Sowerby, Junior, and each of the works has been, and will be published in such a manner, as not to interfere for some years to come with each other. Each part is a complete monograph of the family figured, as far as known in Europe. These works will be most valuable to the Society's library, and a reference to all known shells.

Both Mr. Sowerby, Junior, and Mr. Reeve, requested the favour that you will be pleased to point out the utility, fidelity, and cheapness of the works. The Thesaurus can be kept, and ordered in the same manner as the Iconica.

In hopes that the Society will be pleased with the shells and the two works,

I remain, My dear Sir,

Your's truly,

HUGH CUMMING.

With reference to this proposal some conversation ensued. It was thought by some members, that generally, and as an usual practice, the system of private exchanges might be carried further than comported with the character of the Society, the objects of its institution, and the true interests of science, which might perhaps eventually be better served by sending, at all events in the first instance, duplicates of all kinds to the Honorable the Court of Directors, from which the Society receives such warm and liberal support,* and subsequently to all national and public establishments, both English and Foreign, the Society rather taking its chance as to returns, than as now contributing to enrich private cabinets. Nothing definite was, however, proposed, but the Rev. Dr. Hæberlin undertook to draft and submit his views on the subject, so that those of other members of the Committee of Papers might also be elicited, and perhaps some definite proposal be submitted to the body of the members on the subject, which it was allowed on all sides is one of very great importance.

A curious dulcimer used by the Arracanese, was presented by W. Peacock, Esq. which excited much attention.

REPORT OF THE CURATOR OF MUSEUM ECONOMIC GEOLOGY, AND GEOLOGICAL
AND MINERALOGICAL DEPARTMENTS, FOR THE MONTH OF JUNE 1844.

I should perhaps commence my report of this month by saying, that we have received from Government the following letter in relation to an indent made upon the H. C's Dispensary, and with it the articles allowed by Government.

* See also Proceedings for April 1841, No. 109, Vol. x. p. 64 and 66 at the bottom.

No. 1456.

From Under-Secretary to the Government of Bengal, to the Vice President and Secretary of the Asiatic Society, dated Fort William, 3rd June, 1844.

SIR,—I am directed to acknowledge the receipt of your letter, dated the 20th March last, submitting an indent for Chemical Apparatus and Re-agents, required for the Laboratory of the Museum of Economic Geology.

2. In reply, I am directed to state, that the Deputy Governor of Bengal having consulted the Medical Board, they have been pleased to comply with the indent to the extent shewn in the accompanying list, which specifies the articles and the quantities of them available in the Dispensary for the purpose in question.

I have the honor to be, Sir,

Your most obedient servant,

A. TURNBULL,

Under-Secy. to the Govt. of Bengal.

Without entering into details which would not interest the meeting, I may say, that we have now, with what we had before purchased and provided in various ways, about two-thirds of what is required, so far to furnish our Laboratory, that generally speaking, its operations can go on when required without the loss of time and imperfection of research which arise from a deficiently provided one; and for the remaining third, which is fortunately the least expensive one, we shall be enabled I hope to supply it from the European shops and Bazars, so, as at no great cost to the Society, to avoid the loss of time and labour which the preparation of our own re-agents and apparatus entails.* It may not be out of place here to say, for it may a little enlighten many who have no conception of the difficulties attending chemical research in India, that I have recently found that it is impossible to procure even so common an article as chemically pure Carbonate of Soda in Calcutta! None of the shops having any but the common pharmacopeial drug, which always contains a little sulphate or muriate, or both. Professor O'Shaughnessy informs me, that he has also failed in finding any.

Geological and Mineralogical.—We have received from Captain Newbold, M. N. I. a valuable paper, being a "Note on a recent Fresh-water Deposit," with a few remarks on the origin and age of the Kunkur of the South of India, and supposed decrease of thermal temperature, which throws much light on the origin of this curious mineral, at least in that quarter; and it is hoped, that Captain N., with his known activity of research, will not lose sight of this subject, forming as it does, one of the great problems of Indian Geology. The paper should have early insertion in our Journal.

* See letter and resolution at p. lxiii and lxiv.

Museum of Economic Geology.

We have received here from Mr. Sanders, five bottles of mineral water near Moulmein, but I have deferred their examination, as well as every thing else of the kind, to be able to go on with the Laboratory arrangements, and the clearing off some arrears of work which have accumulated in that department.

Mr. De Garnier, at my request, has obligingly furnished the Museum with three samples of the best Naxos emery, as prepared for the use of manufacturers at home.

For all the foregoing communications and presentations, the best thanks of the Society were voted.

Proceedings of the Asiatic Society for the month of August, 1844.

Wednesday Evening, the 7th August, 1844.

The usual Monthly Meeting took place on Wednesday evening, the 7th August, at 8½ p. m. The Honorable the President in the Chair.

C. F. Buckland, Esq., C. S. was elected a Member of the Society, and the usual communication was ordered to be made to him.

New Member, Captain Mackenzie, B. N. I.

Proposed by the Honorable Sir H. T. Maddock, seconded by the Honorable the President.

The following list of books presented and purchased, was read:—

Books received for the Meeting, on the 7th August, 1844.

1. The Meteorological Register for January 1844. From the Surveyor General's Office.

2. Transactions of the Society of Arts, Vol. LIV. for 1844.—Presented by the Editor.

3. The Annals and Magazine of Natural History for 1844, Nos. 156, 157 and 158.—Purchased.

4. The London, Edinburgh, and Dublin Philosophical Magazine, 3d series, Nos. 156, 157 and 158.—Presented by the Editor.

5. The Calcutta Christian Observer, for June and August, 1844.—Presented by the Editor.

6. Journal Asiatique, ou Recueil de Mémoires 1844, No. 9.—Presented by the Editor.

7. The Oriental Christian Spectator, July 1844.—Presented by the Editor.

8. Proceedings of the Academy of Natural Sciences, two Nos. Vol. II, January and February 1844.—Presented by the Editor.

9. The Palms of British India, from the Calcutta Journal of Natural History.—Presented by Dr. W. Griffith.

10. The Athenæum for May 4th, 11th, 18th, 25th and June 1st 1844, from the Editor.

11. The Singapore Tide Register in six sheets.—From Government.

12. A general Catalogue of the Fixed Stars, from Observations made at Madras in the years 1830, 1843.—From Government.

13. Meteorological Register kept at the Honorable Company's Observatory Madras.—Presented by Government.

14. Sixty-eight spare Nos. of the Asiatic Journal for the years 1833, Nos. 12; 1834, Nos. 10; 1837, Nos. 6; 1838, Nos. 9; 1840, Nos. 12; 1841, Nos. 12; 1842, Nos. 12; 1843, Nos. 3.—Presented by John Marshman, Esq.

15. Lardner's Cabinet Cyclopædia, on Electricity, Vol. II.—Purchased.

16. Ayeen Akbery, or the Institutes of the Emperor Akber, Vol. II.—Presented by F. S. Owen, Esq.

17. General Register of the Bengal Civil Service, from 1790 to 1844.—Presented by the Author.

18. The Dabistan, or School of Manners, Translated by Shea and Troyer, 3 Vols.—From the Oriental Translation Committee.

19. Ibn Khallikan's Biographical Dictionary, translated by McGleckin de Slane, 2d Vol. From the Oriental Translation Committee.

In reference to the donation of 68 spare numbers by Mr. Marshman, the Sub-Secretary stated, that he had been fortunately enabled to supply that gentleman with one of the early numbers to complete his set, but that as these numbers were often inquired for and very scarce, though many, no doubt, might be in existence; it would be desirable to make it known that the Society would be thankful for all spare and odd copies of the Journal which might be scattered about in private hands,* and would in exchange be happy to assist in completing volumes.

Read the following letter from Messrs. W. and H. Allen and Co. the Society's London agents:—

H. TORRENS, Esq. *Vice President and Secretary to the Asiatic Society of Bengal.*

SIR,—The six cases of Books consigned to our care by the "Britannia," have been duly received and forwarded to their respective addresses. The duty and other expenses on the Books will be repaid to us by the institutions receiving them. We have the pleasure to enclose you receipts for the cases.

The Heads of Trinity College, Dublin, have intimated their wish to send your Society a case of books in return for those received from you. We have offered our services in forwarding them to India.

Nothing has yet been heard of the "Earl of Hardwicke."

We have the honor to be, Sir,

Your faithful servants,

London, 31st May, 1844.

WM. H. ALLEN and Co.

And the following from his Grace the Lord Primate of Ireland, Chancellor of Trinity College, Dublin.

H. TORRENS, Esq.

SIR,—I beg to acknowledge the receipt of your letter accompanied with a case of books from the Asiatic Society for the Library of Trinity College, Dublin, and I am requested by the Provost and Fellows of the College, to express their thanks to the

* As in the Mofussil, whence we should be happy to pay the banghy-postage, particularly for early numbers.

Asiatic Society for this valuable and acceptable present. I am also requested to inform you, that the Heads of the University assent with pleasure to the proposal of the Asiatic Society relative to a reciprocal presentation of recent publications. An order has, in consequence, been given to their booksellers to prepare a box of books lately issued from the University Press, for immediate transmission to London, to be thence forwarded to the Society. It will contain the eleven volumes of Archbishop Usher's works already republished, and some other works. As soon as the new edition of the Archbishop's works shall be completed, another box of books will be forwarded.

I am, Sir,

With much respect, your obedient servant,

JOHN G. ARMAGH.

London, 13th May, 1844.

From M. de Villemain, Ministre, de l' Instruction Publique a Paris.

Monsieur, —, J'ai reçu la lettre que vous m'avez fait l'honneur de m'écrire pour m'informer de l'envoi que vous a fait la Société Asiatique de Calcutta, d'une caisse de livres orientaux qui vous paraîtraient destinés à être offerts au gouvernement Français.

Je vous prie, Monsieur, de vouloir bien m'adresser ces livres à Paris, par la voie que vous jugerez la plus convenable, en ayant soin de faire suivre les frais qui résulteront de cet envoi et que j'aurai soin de faire acquitter aussitôt que les livres me seront parvenus.

Recevez, Monsieur, l'assurance de ma considération distinguée.

Le Pair de France.

Ministre de l'Instruction Publique,

Paris, le 18 Mai, 1844.

Signature

VILLEMMAIN.

A Monsieur Allen, libraire de la Compagnie des Indes Orientales, à Londres.

Official receipts for similar dispatches of books were also enclosed by Messrs. Allen and Co. from the Very Reverend the Vice Chancellors of the University of Oxford and University of Cambridge, the Prussian Consul General, and the Consul General of the Netherlands.

Read the following letter addressed to the Society by W. Prinsep, Esq.

H. TORRENS, Esq., Secretary to the Asiatic Society, Calcutta.

SIR,—With reference to the orders received from you, as a Member of both the Committees for procuring the portraits of Sir Ed. Ryan and of H. T. Prinsep, Esq., I beg leave to advise you, that being without any remittance for the purpose of paying to the artists the first half of their demand, which is the invariable custom, I have recommended to Sir Ed. Ryan and my brother the course they have adopted this day, and I have now to request that you will meet with due honor, a bill drawn at 10 days' sight in favor of Messrs. Roberts, Mitchell and Co. for Co's. Rs. 1,142-13-8, being the equivalent of £100 negotiated at 1-9, the exchange of the day. The bill is signed by Sir Ed. Ryan, H. T. Prinsep and myself, and you can appropriate the half to each fund in your hands, as we shall here pay £50 to each artist on account. I am happy to say, that the likenesses of each promise to be excellent. I trust you will at once remit the remainder of each fund, so as to enable me to complete the arrangements and provide proper frames and packing cases for them.

I remain, Sir,

Your most obedient servant,

W. PRINSEP.

London, 7th June, 1844.

The Secretary stated that the bill had been duly honoured, and read also parts of a private communication from Mr. Prinsep, stating that the Society might have casts of the marble busts now executing of Mr. H. T. Prinsep and Sir Charles Metcalfe for £5 each, which was gladly sanctioned.

W. PRINSEP, *Esq.*, care of Messrs. RICKARDS, LITTLE AND CO. of Bishop's Gate Street, London.

SIR,—I have the honor, by desire of the Asiatic Society of Bengal, to acknowledge the receipt of your letter dated London the 7th June last, advising a bill of exchange in favour of Messrs. Roberts, Mitchell and Co. for Co's. Rs. 1,142-13-8, being the equivalent of £100, exchange at 1-9 perrupee, for the advance paid by you to the artists for the portraits of Sir Edward Ryan and H. T. Prinsep, *Esq.*, which you are empowered to procure. The bill was presented on the 28rd ultimo, and paid to Messrs. Carr, Tagore and Co. on the 5th instant, to whom it was made payable by the drawers.

The balance of the subscriptions for the portraits will be remitted to you by an early opportunity, and I am requested to express the satisfaction of the Society that the likenesses promise to be excellent.

I am, &c.,

Calcutta, Asiatic Society's Rooms, the 13th August, 1844.

H. TORRENS.

Read the following letter in reply to the Society's recommendation of M. Callery's translation :—

No. 386.

From T. R. DAVIDSON, *Esq.* Officiating Secretary to the Government of India, to H. TORRENS, *Esq.* Vice President and Secretary Asiatic Society, dated the 20th July, 1844.

Home Department.

SIR,—I am directed by the Governor General in Council to acknowledge the receipt of your letter dated 4th instant, and to state in reply, that the Government of India has already subscribed for 15 copies of Monsr. Callery's translation of the Chinese Encyclopædia of the Emperor Kang-hi.

I have the honor to be, Sir,

Your most obedient servant,

T. R. DAVIDSON,

Officiating Secretary to the Government of India.

Council Chamber, the 20th July, 1844.

Read the following letters from the Officiating Secretary to Government of India, and the Secretary Public Department, Fort St. George :—

No. 383.

From T. R. DAVIDSON, *Esq.* Officiating Secretary to the Government of India, to H. TORRENS, *Esq.* Secretary Asiatic Society, dated the 20th July, 1844.

Home Department.

SIR,—In compliance with the request of the Government of Fort St. George, I am directed to forward herewith for the use of the Society, a copy of the Meteorological Observations recently published at Madras.

I have the honor to be, Sir,

Your most obedient servant,

T. R. DAVIDSON,

Officiating Secretary to the Government of India.

Council Chamber, the 20th July, 1844.

No. 577.

To the Managing Committee of the Literary Society at Calcutta.

Public Department.

GENTLEMEN,—I am directed by the Most Noble the Governor in Council, to transmit to you the accompanying copy of the 6th volume of the Madras Astronomical observations, recently published at this Presidency.

I have the honor to be, Gentlemen,

Your most obedient servant,

Fort St. George, 29th June, 1844.

J. F. THOMAS,

Secretary to Government.

Read the following letters from the Secretary to the Superintendent of Marine, and Under-Secretary to the Government of Bengal:—

No. 492.

To H. TORRENS, Esq. Secretary to the Asiatic Society.

SIR,—I have the honor, by direction of the Acting Superintendent of Marine, to forward to you the accompanying copy of a letter No. 1147, dated the 29th April last, from the Under-Secretary to the Government of Bengal, together with copies of the Tidal Registers which accompanied it.

I have the honor to be, Sir,

Your most obedient servant,

*Fort William, Marine Superintendent's Office,
the 30th July, 1844.*

J. SUTHERLAND,

Secretary.

No. 1147.

*From Under-Secretary to the Government of Bengal, to Lieut. Col. A. IRVINE,
C. B. Acting Superintendent of Marine, dated Fort William 29th April, 1844.*

Marine.

SIR,—I am directed to transmit to you, for information and record, the accompanying Tidal Registers, kept at Singapore during the months of June, July, August, September and October, 1842, and to request that copies thereof may be forwarded to the Asiatic Society.

I have, &c.,

(Signed) CECIL BRADON,

Under-Secretary to the Govt. of Bengal.

(True Copy.)
*Fort William, Marine Superintendent's
Office, the 30th July, 1844.*

J. SUTHERLAND, *Secretary.*

Read the following paper from the Secretary to the Government of India, Foreign Department:—

No. 1542 of 1844.

*From W. EDWARDS, Esq. Under-Secretary to the Government of India, to the
Secretary to the Asiatic Society, dated Fort William, the 6th July, 1844.*

Foreign Department.

SIR,—By direction of the Governor General in Council, I have the honor to transmit to you, for such notice as the Society may deem it to merit, the accompanying copy of

a report by Lieut. Cruttenden, Assistant Political Agent at Aden, on the Mijjertheya tribe of Somallees, inhabiting the district forming the North-east point of Africa.

I have the honor to be, Sir,

Your most obedient servant,

Fort William, the 6th July, 1844.

W. EDWARDS,

Under-Secretary to the Govt. of India.

This valuable paper was referred to the Editors of the Journal for early publication.

Read a letter from Mrs. Greenlaw, widow of the late C. B. Greenlaw, Esq. presenting to the Society a handsome model of the Steamer *Enterprise* (the first steamer which came round the Cape*) carved from a piece of her keel.

Read the following letter from Dr. Wallich, Superintendent H. C. Botanical Garden, accompanying the splendid donation to which it refers :—

To H. TORRENS, Esq.

MY DEAR SIR,—Will you do me the favour to present to the Asiatic Society, at their next meeting, a tolerably good skull of the Hippopotamus. It was the best I could procure at the Cape. I brought it with me from thence about a month ago, and Mr. Blyth was put in possession of it soon after my arrival.

In case the Society should think that I could be of service in procuring objects of Natural History from South Africa, I should be happy to assist in the best way I could.

I have the honor to remain,

My Dear Sir,

Your sincerely,

N. WALLICH.

Botanic Garden, 31st July, 1844.

Read the following note from the Revd. Dr. Hæberlin on the reference which had been made to him of the letter from the Royal Bavarian Academy of Munich :—

MEMO.—The “Royal Bavarian Academy of Sciences” at Munich, has for the comparatively short period of its existence acquired a great renown for its scientific researches, which include oriental studies, and deserves, therefore, the acknowledgment of the Asiatic Society of Bengal. Having been honored by the Academy with the proposal of an interchange of our respective publications, it appears to me highly desirable for our Society, and it is to be hoped mutually advantageous, to accede to the proposal.

* In 1826.

Dr. Von Martins (in his letter,) states, that only certain parts of our Journal were accessible to the Academy. These parts being lodged in the Royal Library at Munich.

I am of opinion, and would accordingly recommend, that in token of our readiness to enter into the proposed intercommunication, we send at once (instead of completing the volumes in the Royal Library,) a complete copy of our Journal from the commencement, and engage to continue the same, as well as a copy of *Researches* hereafter to be published by us. At the same time, I think we should express our desire to be favored in return with all the publications of the Academy.

J. HÄBERLIN.

Calcutta, 23d July, 1844.

The Secretary remarked, that it would be very difficult now to supply a complete set of the Journal, as the early volumes were very scarce; and after some conversation it was resolved, that as complete a copy as could be obtained of the Journal, should be forwarded to the Bavarian Academy.

Read a letter from the *Société Géologique de France*, expressing a wish to receive the Society's Journal, and to correspond with it.

The Secretary stated, that only two volumes of the Journal of this Society's Proceedings, vols. 1835 to 1837 had been received, and he proposed to write to them, stating this, and requesting to know what volumes it had received of the Journal, so that the two Societies might renew their very desirable exchange of works, without the chance of sending duplicates.

Read the following letter from the Rev. Mr. Mack, Serampore College, who had kindly sent the two coins to which it refers for the Society's inspection:—

MY DEAR SIR,—The coins (one gold, and the other silver,) which were dug up in the Soonderbuns, and belong to Serampore College, will be found, I believe, to agree very closely with some of those which have been figured by Mr. Prinsep.

The gold coin was dug up on the estate lately belonging to Serampore College about the year 1835; the other was obtained about the same time, but whether from that estate or one adjoining, I cannot tell. The estate belongs to that part of the Soonderbuns on which there are few or no Soondery trees, which is not Virgin Forest, but has innumerable trees of former inhabitants. Amongst other things we found a potter's kiln, that is, a mass of little lamps or churags, and similar saucer-like dishes, which had evidently never been moved from the kiln. They were much superior to the ordinary manufacture of similar articles of the present day. The material was fine, and the surface perfectly clean and smooth, although they had lain so long in the salt soil. They appeared to me of much the same consistence as the fine

tiles and bricks I have seen in the old temples of Assam, which the present inhabitants of the province cannot imitate.

Serampore, 6th June, 1844.

I remain,

Your's faithfully,

JOHN MACK.

P.S.—My friend, Mr. Bonnaud, will oblige me by taking the coins to the Asiatic Society's Museum for you, and I shall feel obliged by their early return and the fruits of your examination of them.

The locality in which these coins were found excited much speculation; and it was agreed, that if not already published, they should be lithographed for the Journal.

Read the following letter from S. G. T. Heatly, Esq. with the specimen sheets of the work referred to.

H. TORRENS, Esq.

MY DEAR SIR,—I request your good offices with the Asiatic Society to obtain its permission, that I may inscribe a volume on mathematical analysis now passing through the press, with its name.

It is not ordinarily that Societies are the object of dedications, but you can appreciate the feeling which (a humble member of it,) I wish to express for the labours of the oldest scientific association in India, and nearly the only one.

The book is entitled the "Theory of Functions." I undertook it some years ago to combine into one homogeneous body, all our knowledge in that department; since then the later labours of Cauchy, Lionville, Hamilton and De Morgan, working in separate veins have illustrated so many obscure points, and developed connexion between subjects apparently so dissimilar, that I resolved to commence a second edition, without publishing the first; nor has the lately completed volume of Professor De Morgan done much in the peculiar field which I have marked for my labours, unequalled though that volume be in English mathematical literature for its extent of matter, rigour of demonstration, and clearness of language.

My "Theory of Functions" will be adapted to the purposes of mathematical education, and containing all the important results of modern analysis, especially those which are essential in the pursuits of physical science.

A few pages of the first edition will enable you to judge of the work.

August 6, 1844.

Your's sincerely,

J. G. F. HEATLY.

The Secretary was desired to express to Mr. Heatly, that the Society would feel much gratified by his proposed dedication, and that it would look forward with pleasure to the appearance of a work of this high order in India.

Read the following letter from Capt. H. L. Bigge, 1st Assistant to the Commissioner of Assam. The curiosities to which it refers were on the table.

To H. PIDDINGTON, *Esq.*, *Asiatic Society.*

MY DEAR SIR,—I have the pleasure to send a few curiosities from China, which, if you think them worthy the notice of the Members, you will oblige me by putting on the table for the Meeting this evening.

1 Chinese Pistol, 3-barrelled.

1 Cross Bow, ditto.

1 Pipe, 2 Lamps, and 1 Seal.

1 Deer's Head, (Chusan.)

4 Anatomical Drawings.

1 Chinese Tea Urn.

Mineralogical Specimens.

1 Model of Door Latches.

Yours sincerely,

H. L. BIGGE.

No. 41, *Park Street.*

The Secretary stated, that having written to Mr. Secretary Edwards for the map accompanying Major Mackeson's route to Sirsa and Bahawulpore, of which the report had been sent to the Society for publication by Government, and was now at Press, he had been informed that the map was now printing at the Government Lithographic Press, and that the Society could be supplied with copies; in return for which, he had offered to Government such number of the printed report as it might require, so that the utility of the map would be much increased by distributing the printed report with it.

He also stated, that Raja Kalee Krishna Bahadoor had sent to the Sub-Secretary for perusal, a private letter from M. Garçin de Tasey, thanking the Raja for having sent him a very rare and valuable Persian MSS. of the Atesch Kada, of which an account had been published in the last No. of the Journal of the Royal Asiatic Society of London, by Mr. Bland.

Upon enquiry, he regretted to say, that the Raja had not preserved a copy before sending it, and he requested to be authorised to procure one, if possible, for the Society's Library, which was sanctioned.

J. Owen, Esq. of Assam, presented in addition to his kind donation of the Ayeen Akberry, two balls of the opium-rags as prepared by the ryots of Assam, for sale and common consumption.

These are small, long, strips of narrow rags, on which the fresh opium being collected from the poppy head is smeared, and the whole rolled up into a ball about the size of a small hen's egg, and carried about for daily use,

or sold as merchandise in all the bazars. Opium was stated to be the most profitable crop raised by the cultivators.

An engraved proof portrait of Rammohun Roy was presented by the Sub-Secretary, and it was suggested that the Society might, with great propriety, as occasion offered, collect such portraits of remarkable individuals, whether Natives or Europeans, who have distinguished themselves in literature or science in India, and more especially of such as have also been Members of the Society.

The Secretary announced with deep regret to the Society, the death of an old and highly-talented associate, and formerly a valuable servant of the Society, Dewan Ramcomul Sen, a gentleman not less distinguished for his great attainments, his enlightened views, his steady attachment to the cause of education, and his untiring energy and industry in every good and useful work, by which the community, Native or European, could be benefited, than by his modest, and even retiring character, and extensive charity.

The friend and correspondent of Mr. Colebrooke, Professor Wilson, Mr. W. B. Bailey, and many other gentlemen formerly connected with India; he was known in Europe as here, as one possessing not only great acquisitions in the literature of his country, but an ardent desire to see its children regain their ancient place amongst the families of the human race; and towards this noble end, for a whole life were his strenuous endeavours directed. Perhaps indeed with too much zeal; for there is reason to believe, that he fell a sacrifice to over-exertion in study, superadded to the labours which his highly responsible situation of Dewan of the Bank of Bengal necessarily imposed upon him.

The Honorable the President proposed, and it was agreed to *nam dāss*. that a letter of condolence, expressing the deep regret of the Society, should be addressed to his family.

The following letter was in consequence addressed to Baboo Hurreemohun Sen, the son of the deceased, and is inserted here for the sake of connection:—

TO BABOO HURREEMOHUN SEN.

SIR,—I am desired by the Honorable the President and Members of the Asiatic Society to convey to you, and to request, that you will express to the other members of

the family of your late father, the deep and unfeigned regret with which the Society has learnt his decease.

They cannot, Sir, on such an occasion refrain from testifying to you and his relatives and friends, the high esteem which his literary acquirements, his steady advocacy of the cause of native education, his many private and public virtues, and his long and valuable services to the Society had won for him from its Members, and from every friend to literature and science both in India and in Europe, to whom he was known; nor will the Society cease to cherish his name, and to deplore his loss, as one of the most distinguished and most deeply lamented of their associates.

I am, &c.

Museum, 9th August, 1844.

(Signed) H. TORRENS,
V. P. and Secretary Asiatic Society.

Read the following Report from the Curator of Museum Economic Geology, &c. &c.

REPORT OF THE CURATOR MUSEUM ECONOMIC GEOLOGY AND GEOLOGICAL AND MINERALOGICAL DEPARTMENTS, FOR THE MONTH OF JULY.

We received sometime ago from our zealous contributor, Captain Newbold, for the *Geological and Mineralogical* Museum of Economic Geology,* a remarkable red sandstone rock, from the junction of the diamond limestone and sandstone near Kurnool. This I have been occupied with, and though the results are of no great interest, they may be worth placing on record to save the labour of others, who like Captain Newbold and myself, may be struck with its appearance and remarkable smell when fresh fractured. The paper being merely chemical, would barely interest the Meeting, but may be thought worthy of insertion in the Journal.

From Dr. Spilsbury, who I rejoice to say, has kindly promised us to continue his well-known and indefatigable services, we have received five specimens of the slaty sandstone of Bundelcund, with the dendritic impressions which are now considered to be metallic, and not, as formerly, vegetable. "The locality from which these are obtained," says Dr. Spilsbury, "is Miswangso, about nine miles North of Saugor, on the high road to Jhansee and Gwalior, where it is extensively quarried for building purposes. You will observe, it varies from almost white down to brick red."

Dr. Spilsbury also announces, that he has collected specimens of the fine coal of Lameta on the Nurbudda, close to Jubbulpore, which will be soon forwarded.

Lieut. Sherwill of the Revenue Survey Department, has forwarded to us specimens of the Sitajeet of Behar. The following is the extract from his letter:—

"By to-day's dak banghy, I have despatched several specimens to your address, of a substance called by the natives Sitajeet. **सिताजित** It is procurable in small quantities from a range of very curious formed granite hills on the borders of the Palamow Forest, not far from the Sone river. It is found high up in the rocks in small whitish globules, is scarce, and much sought after by the natives, who with great difficulty

* We are indebted to Captain Newbold for several other contributions, but as they require examination, I have not yet been able to bring them forward.

not unattended with danger, gather it towards the end of the cold weather. It is valued as a great restorative and aphrodisiac. On the table land of Rhotasgurn I have seen it on the face of the great mural precipices, wearing the appearance of tar or pitch, or oozing from the sandstone,* but being far beyond the reach of man, it may or may not be this substance. The natives declared it is the *Sitajeet*. You will perceive mine has a strong taste of alum.

Lieut. Sherwill's specimen is on the table, and is a black aluminous shale, with an acid efflorescence of alum, contaminated with a little iron. If abundant and accessible, and with plenty of fuel at command, no doubt alum might be advantageously manufactured from it. Perhaps even by solar evaporation only? The aluminous efflorescence answers in many of its chemical characters to the *Sitajeet* described, and analysed by Mr. Stephenson in Vol. II. p. 321 of the Journal, but ours gives a light cloud with nitrate of silver from the excess of sulphuric acid, and the same with oxalate of ammonia, shewing, that it may contain a little lime. I also used ammonia to precipitate the alumina in the gelatinous form. Heated in a platina spoon it melts and boils up into a round dull greyish white bubble, which remains solid at a strong heat between the forceps; moistened with nitrate of Cobalt it gives the usual blue colour.

The description Lieut. Sherwill gives of the tar-like appearance of some of the exudations, much reminds us of Buchanan's description of that which he visited at Tapoban in the Rajagriha Hills in Behar. At page 255, Vol. I, of Martin's edition, he thus describes the substance itself, after the detail of the locality and the manner in which an old man of the Musahar tribe collected it before him.

"When fresh from the rock, *Sitajeet* is of a dirty earth colour, and is always mixed with impurities, that crumble into it from the precipice above. It is then about the consistence of new honey, and has a strong rather disagreeable smell, although it cannot be called very offensive. When kept in a bottle with a glass stopper for some months, it acquires a deeper brown colour, and becomes thicker; and exposed to the air, it may soon be made into pills. It seems to be very different from a substance which, in Nepal, is called by the same name. From the hot springs in the vicinity, and the heat of the cave below, I suspect that it exudes from the action of subterraneous fire. The natives pretend that monkies eat it, and attribute the small quantity procured to their depredations; but I think that the circumstance is doubtful, and have no doubt, that, with care and a ladder, several pounds might be procured, should it be found useful; but it owes its celebrity among the natives to its being supposed to possess the imaginary quality of an aphrodisiac. When placed on burning charcoal, it swells a little and smokes, and when heated red, is reduced to white ashes without emitting flame. It cannot I presume, therefore, be considered as a bituminous or inflammable substance, the only class of minerals to which it has any resemblance.

* This may be Mineral tar and an indication of the presence of Asphalt. I wrote to Lieut. Es. requesting him to look for this mineral, of which I sent him also a specimen.

Proceedings of the Asiatic Society for the month of SEPTEMBER, 1844.

The usual Monthly Meeting was held at the Society's rooms on Wednesday evening the 4th September, H. Torrens, Esq. Vice President and Secretary in the Chair.

Captain W. L. Mackintosh, B. N. I. proposed at the last Meeting, was ballotted for, and being declared duly elected, the usual communication was ordered to be made to him.

The following gentlemen were proposed as Members :—

J. Owen, Esq.—proposed by H. Torrens, Esq. Vice President, seconded by H. Piddington, Esq.

A. C. Barwell, Esq. C. S.,—proposed by H. Torrens, Esq. Vice President, seconded by Lieut. Colonel Forbes.

As Corresponding Member,—Dr. McGowan, Medical Hospital, Ningpo,—proposed by the Revd. J. Long, seconded by S. G. T. Heatley, Esq.

The following list of books presented was read :—

1. The Meteorological Register for July 1844.—From the Surveyor General's Office.

2. Athenæum for June the 8th, 15th, 22nd, and 29th, 1844.—From the Editor.

3. The Calcutta Christian Observer for September, 1844.—By the Editors.

4. The Oriental Christian Spectator for August, 1844.—By the Editor.

5. Proceedings of the Botanical Society of London, Vol. 1, part 1.—By the Society.

6. Proceedings of the Royal Irish Academy for the year 1841-2, part 6th.—By the Society.

7. Proceedings of the Royal Society of Edinburgh for December 1841 and January 1842, Nos. 10 and 20.—By the Society.

8. Annuaire du Bureau des Longitudes 1844.—By the Bureau.

9. Connaissance des Temps, avec additions 1843, 1844 and 1845.—By the Bureau.

10. Transactions of the Royal Society of Edinburgh, vol. 15th, part 2nd.—By the Society.

11. Memoires de la Societe de Physique et d'Histoire Naturelle de Geneve, 1841-2.—By the Society.

12. Transactions of the Royal Irish Academy, vol. 19, part 2nd, 1843.—By the Society.

With reference to the presentation of the volumes by the Royal Irish Academy, it was ordered that the Journal of the Society should be sent to them, and that the Librarian should be requested to ascertain and report if any reciprocation had formerly taken place.

Read the following Circular, with the accompanying letters and resolutions of the Committee of Papers :—

No. 1.—The Secretary with reference to the annexed resignation of the Honorable the President, requests the attendance of Members of the Committee of Papers at a special meeting, to be holden at the rooms on Tuesday morning the 3rd September 1844, at $\frac{1}{2}$ past 10 A. M.

H. PIDDINGTON,
Sub-Secretary.

30th August, 1844.

No. 2.—To H. W. TORRENS, Esq. *Secretary Asiatic Society.*

SIR,—Being on the eve of my departure from India, I beg leave to place in your hands my resignation of the office of President of the Asiatic Society, and to request, that in laying it before the Committee of Papers for communication to the next general meeting, you will be so kind as to express my sincere thanks for the gratification which my connexion with it has always afforded me, and my best wishes for the success of its labors, and the continuance of its credit and celebrity throughout the scientific world.

I have the honor to be, Sir,

Calcutta, August 20, 1844.

Your most obedient humble servant,

W. W. BIRD.

No. 3.—At a Meeting of the Committee of Papers held at the Society's rooms on Tuesday the 3rd September, at half-past 10 A. M.

Present :—Lieutenant Colonel Forbes ; Charles Huffnagle, Esq. ; Rev. J. Hæberlin ; F. G. S. Heatley, Esq. ; Lieutenant A. Broome, B. A. ; H. Torrens, Esq. Vice President and Secretary,

Resolved.—That it be proposed to the Society at the meeting, that measures be taken to ascertain whether the Right Honorable the Governor General would be inclined to take the office of President.

2. That it be also suggested to the Society, that the Honorable Mr. Bird, our late President, be requested to sit for his Picture on his arrival in England, in order that it may be placed in the room of Meeting, as a memento of the gratitude of the Society to him, for his steady and valuable maintenance and support of its interests in all respects, both as President and as Member during thirty-three years.

3. That it be also recommended to the Society, that the charge for the Portrait be put to the head of charges general.

H. TORRENS, *Vice President and Secretary.*

After some discussion, the recommendations of the Committee of Papers were adopted.

Read the following letters and statements of Accounts from Messrs. Allen and Co. the Society's London Agents and Booksellers, with reply to them from the Secretary :—

HENRY TORRENS, Esq. *Secretary to the Asiatic Society of Bengal.*

SIR,—We have the pleasure to hand you herewith our account current with the Society for the year ending the 30th June last. The balance is £51 : 12 : 9 in favor

of the Society. This amount we propose to retain in part payment for the bust of Mr. B. H. Hodgson, which you have commissioned us to get executed. In the event of your wishing the accounts kept separately, we shall be happy to honor your draft, at 3 months' sight, for the balance now stated to you. We shall then draw upon the Society, as we were instructed, for whatever we may pay, on account of the bust.

Dr. Busch of Bremen, has written us to say, that he has consigned a box of shells to our care for the Society, and we are requested to forward the same to Calcutta, as soon as it reaches us. This we shall attend to. In our next letter we shall be able to say how the box has been forwarded.

We have the honor to be, Sir,

Your most obedient servants,

London, July 2nd, 1844.

WM. H. ALLEN AND CO.

DR. . . The Asiatic Society, Calcutta, in Account with Wm. H. Allen and Co. . . CR.

	On hand June 30, 1843.	Recd. since.	On hand June 29, 1844.	Sold.	Per Copy.			
Asiatic Researches. vol. 15, 4to. sewed, ..	19	0	19	0	24	0	0	0
Ditto, vol. 16,	9	0	8	1	0	1	4	0
Ditto, vol. 18, pt. 1,	5	0	4	1	12	0	12	0
Ditto, vol. 18, pt. 2,	8	0	8	0	0	0	0	0
Ditto, Index to first 18 vols.	20	0	19	1	0	0	12	0
Ditto, vol. 19, pt. 1,	31	0	28	3	0	1	16	0
Ditto, vol. 19, pt. 2,	38	0	34	4	0	2	8	0
Ditto, vol. 20, pt. 1,	29	0	27	2	0	1	4	0
Ditto, vol. 20, pt. 2,	37	0	33	4	0	2	8	0
Amis-ul-Musharahin, 4to. sewed,	3	0	3	0	12-10	0	0	0
Putwa Alemgiri, vol. 1, royal 4to.	1	0	1	0	24	0	0	0
Ditto, vol. 2,	1	0	1	0	0	0	0	0
Ditto, vol. 3,	3	0	3	0	0	0	0	0
Ditto, vol. 4,	4	0	4	0	0	0	0	0
Inayah, vol. 3, 4to.	1	0	1	0	0	0	0	0
Ditto, vol. 4, 4to.	32	0	32	0	0	0	0	0
Kifayah, vol. 3, 4to.	6	0	5	0	0	0	0	0
Ditto, vol. 4, 4to.	5	0	29	0	0	0	0	0
Mahabharata, vol. 1. royal 4to.	6	25	32	2	0	2	8	0
Ditto, vol. 2,	8	25	34	1	0	1	4	0
Ditto, vol. 3,	11	25	52	2	0	2	8	0
Index to ditto, 4 parts,	20	50	20	*16	5-8	4	10	8
Ditto, part 4,	20	0	3	0	0	0	0	0
Naishadha Charita,	3	0	21	0	12	0	0	0
Raja Tarangini, comp. 1 vol. royal 4to. sd.	21	0	1	0	20	0	0	0
Susruta, vol. 2, 8vo. sewed... .. .	2	0	5	1	7-2	0	7	2
Tibetan Dictionary, 4to. sewed,	5	0	21	0	20	0	0	0
Mahabharata, vol. 4, royal 4to.	0	25		3	24	3	12	0
						£24 13 10		
Sundry Advertising,				£1	18 0			
Commission 5 per cent.				1	4 8			
						3 2 8		
						£21 11 2		

* Distributed.

1 Index to Mahabharata, 4 p. to Library E. I. H.

1 Ditto ditto to Professor Wilson.

1 Mahabharata, vol 4, to Professor Wilson.

London, July 2, 1844.

E. E.
WM. H. ALLEN, AND Co.

Dr... The Asiatic Society, Calcutta, in Account with Wm. H. Allen and Co... Cr.

For Journal of the Asiatic Society.						No. of Co- pies receiv- ed.	On hand June 29, 1844.	Sold.	Per Copy.	
No. 133, ..	....	....	....	....	....	50	16	*22	2-9	£3 0 6
— 134, ..	....	....	....	....	....	50	18	21	..	2 15 0
— 135, ..	....	....	....	....	....	50	17	21	..	2 17 9
— 136, ..	....	....	....	....	....	50	19	19	..	2 12 3
— 137, ..	....	....	....	....	....	50	18	20	..	2 15 0
— 138, ..	....	....	....	....	....	50	16	22	..	3 0 6
— 139, ..	....	....	....	....	....	50	20	18	..	2 9 6
— 140, ..	....	....	....	....	....	50	21	17	..	2 6 9
— 141, ..	....	....	....	....	....	50	24	14	..	1 18 6
— 142, ..	....	....	....	....	....	50	25	13	..	1 15 9
										25 11 6
Advertising, Portorage, Booking, Postages, &c.						....	....	£2 7 0		
Commission 10 per cent.						....	....	2 11 2		4 18 2
London, 2nd July, 1844.										E. E. £20 13 4
WM. H. ALLEN AND Co.										

* Distributed as under:—12 Copies each, No. 133 to 142, Professor Wilson, Editor Asiatic Journal; Royal Society; Royal Asiatic Society; Edinburgh Philosophical Journal; Royal Institution; Philosophical Journal; Athenæum; Baron Von Hammer Purgstall; Royal Society of Edinburgh; Spectator; Professor Schlegel.

Dr. .. The Asiatic Society, Calcutta, in Account with Wm. H. Allen and Co... Cr.

June 30, 1843.	To Balance of Account stated,	13 18 3	Feb. 17, 1844.	By Cash per Murray, Amount of sale of "Journal" carried here as per letter received from H. Torrens, Esq. dated Sept. 5, 1843.	21 0 9 32 17 0
	Sundries duty on Mahabharata per City of Poona and Shipping expences on various packages received to forward as per statement herewith, ..	30 6 3	June 29,	Account sale of Oriental works as per statement herewith, Account Sale of Journal of the Asiatic Society as per particulars enclosed, ..	21 11 2 20 13 4
	To Balance,	51 17 9			£96 2 3
		£96 2 3		By Balance,	£51 17 9
London, 2nd July, 1844.					
E. E. WM. H. ALLEN AND Co.					

HENRY PIDDINGTON, Esq.

SIR,—Your letter dated the 16th April, enclosing a bill of lading for a case forwarded by the John Fleming, for the Société Royale d'Agriculture de Lyons, has been received, and on the arrival of that vessel, the needful shall be done with it.

SEPT. 1844.]

Proceedings of the Asiatic Society.

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The Journal of the Asiatic Society shall likewise be regularly forwarded to the Society at Lyons.

We are, Sir,

Your faithful servants,

London, July 2nd, 1844.

WM. H. ALLEN AND CO.

MESSRS. W. H. ALLEN AND CO. *Leadenhall Street, London.*

DEAR SIR,—I have the pleasure to acknowledge the receipt of your letter, dated the 2nd July last, covering your account current with the Asiatic Society of Bengal closed to the 30th June last, exhibiting on that date a balance of £51 : 12 : 9 in its favor, together with averages of books. All these have been on examination found correct and satisfactory, and I am desirous to say, that the Society approves of your intention to retain the amount in part payment for the bust of Mr. B. H. Hodgson, which you have been commissioned to get executed. To this sum you will please add £9 : 19 : 2, being sale proceeds of Journals up to No. 133, sold by you, on my individual account, agreeably to your averages rendered in your letter of the 30th January 1844, making together £61 : 11 : 11, but deducting therefrom £2 : 19 : 6, being the value of a set of bills drawn by me on you in favor of Mr. Bartlett, per advice of the 9th August last, which will leave a total of £58 : 12 : 5, disposable for the bust in question.

You will please convey to Dr. Busch of Bremen, the thanks of the Society for the box of shells, which on coming to hand, will be more suitably acknowledged.

I am, &c.

5th October, 1844.

HENRY TORRENS.

Read the following letter from Baboo Hurreemohun Sen, in reply to the V. P. and Secretary's letter of 9th August:—

To H. TORRENS, Esq., Vice President and Secretary, Asiatic Society.

DEAR SIR,—In acknowledging the receipt of your very kind letter of date the 9th instant, conveying to me and the other members of my late father's family, the many expressions of regret and sorrow felt by the Society at his lamented death, I have to apologize much for the delay which, owing to circumstances over which I had no control, has been incurred in my doing so.

Allow me and the rest of the family to return you and all the other Members of that noble institution, our heartfelt thanks for their kind condolence on this occasion, and to assure you, that we highly appreciate, and are grateful for, their kind sympathy in our present distress, and more especially for the sincerity with which it is expressed. The contents of your letter, Sir, have afforded us a great consolation; a consolation which, at such a time as this, is so much needed, and which, coming as it does, from so highly respectable a body of gentlemen, cannot fail to serve as a soothing balm to our painful hearts. It indeed gives a melancholy gratification to our mind to know,

that his loss is so deeply felt and regretted, and his services acknowledged in so very strong terms by those who form a Society which, in point of importance, value and respectability, is the first in the country, and with whom he laboured hand in hand to promote its object for many many years. Fully aware as we are of the painful feeling which this mournful event must have excited in the minds of his late colleagues in the Society, and feeling proud of such a participation, on their part, in the grief we have experienced on account of it, we cannot but be gratified by the conviction which your letter so forcibly conveys to our mind, that his services to the Society and his good qualities had so much endeared him to them, and been conducive to the interest of the institution to such a degree; and in conclusion, we beg to express our feelings of gratitude to them for so valuable a record of the opinion of his career, as well as of his talent and public and private virtues generally, a record which we shall always preserve in the family with pride and pleasure, and to remain,

Dear Sir,

Your most faithful and humble servant,

Bank of Bengal, 29th August, 1844.

HOREMONCH SEN.

The Secretary stated, that he had received a private note from Dr. Campbell, stating, that as authorized by the Society, a brick monument had been built over the grave of Mr. Csoma de Koros, and requesting that a marble slab might be sent up with an inscription for insertion in the space left for it. An elevation of the monument accompanied the letter. The tablet was ordered as requested.

Read the following extract of a private letter to the Secretary, from G. T. Lushington, Esq. C. S.:—

H. TORRENS, Esq. *Secretary of the Asiatic Society, Calcutta.*

MY DEAR TORRENS,—I got up the other day one of the Society's Sanscrit Works, the "Naishada Kabya," 1 vol. price 6 Rs. for a native here, who says that it is incomplete, being only half of the original. Can you tell me whether there is another volume also printed, completing the work, and if there is, would you kindly send it me per dák bhangy, or make it over to my agents, Gunter and Greenaway, who will pay the expences.

G. T. LUSHINGTON.

After some conversation it was ordered, that the subject of the printing of the second volume of the Naishada be referred to the committee of Papers for report.

Read the following letter from the Secretary to Government, North West Provinces:—

No. 715.

FROM J. THORNTON, Esq. *Secy. to Government N. W. P. to Secy. Asiatic Society, Calcutta, dated Agra, the 6th August, 1844.*

General Department.

SIR,—I am desired to place at the disposal of the Asiatic Society, and for publication in the Journal, the accompanying Note, regarding the Navigation of the Nerbudda River, compiled from such information as could be found on the records of this Government, by Mr. A. Shakespear, the Assistant Secretary.

2nd. In the reduction of the map to a size more suitable for publication, the names which are underlined should be retained, as they are mentioned in the Memoir, and are essential to a right understanding of the subject. To prevent mistakes, a separate list of them is annexed, arranged as they occur in proceeding down the stream from East to West. As many more names as is conveniently practicable should of course be inserted, but these ought not to be omitted.

I have the honor to be, Sir,

Your most obedient servant,

J. THORNTON,

Agra, the 6th August, 1844.

Secy. to Govt., N. W. P.

The map, which is a splendid one on a scale of 16 miles to an inch, and forms a roll 8 feet in length, was exhibited.

With reference to the names, it was stated by the Sub-Secretary, that arrangements had been made (by numbering,) so that *all* the names would virtually be inserted in the reduced map for the Journal.

Read the following correspondence on the subject of the Madras Meteorological Registers applied for by the Society:—

No. 403.

From T. R. DAVIDSON, Esq. *Offg. Secy. to the Govt. of India, to H. TORRENS, Esq. Secy. to the Asiatic Society, Calcutta, dated the 27th July, 1844.*

Home Department.

SIR,—With reference to your letter without date, received in July 1843, I am di-

<p>To Secy. to Govts. of Bengal, &c. No. 178, dated 22d July 1843; from Secy. to Govt. Fort St. George, No. 199, dated 6th July 1844, with enclosure to ditto, dated 27th ditto.</p>	}	<p>rected to transmit for the information of the Asiatic Society, a copy of the correspondence specified in the margin.</p>
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I am, Sir,

Your obedient servant,

T. R. DAVIDSON,

Council Chamber, the 27th July, 1844.

Offg. Secy. to the Govt. of India.

No. 51.

To J. F. THOMAS, Esq. Secy. to Govt. Fort St. George.

Home Department, Marine.

SIR,—I am directed to transmit the accompanying copy of a letter from the Secretary to the Asiatic Society, and to request, that you will, with the permission of the Most Noble the Governor in Council of Fort St. George, issue the necessary orders to cause that Society to be furnished direct with the information therein required.

I have, &c.

(Signed)

T. R. DAVIDSON,

Fort William, the 22d July, 1843.

Offg. Secy. to the Govt. of India.

The same to the Governments of Bengal and Bombay.

No. 199.

From J. F. THOMAS, Esq. Secy. to Govt. of Fort St. George, to the Secy. to Govt. of India, dated 6th July, 1844.

Home Department.

SIR,—With reference to Mr. Secretary Davidson's letter of the 22d July, 1843, I am directed to forward copy of one from Lieutenant Elliot at Singapore, under date 25th April last. As it would appear, that Lieutenant Elliot's establishment is not equal to any extra labour, and that the whole of the observations required by the Asiatic Society will, "soon be published in England," the Most Noble the Governor in Council, submits for the consideration of the Government of India, that the Asiatic Society should for the present receive, as proposed by Lieutenant Elliot, only a copy of the mean results, and that instructions to this effect be issued.

I have, &c.

(Signed)

J. F. THOMAS,

Fort St. George, 6th July, 1844.

Secy. to Govt. Military Department.

No. 292.

To the Military Secretary to Government, Fort St. George.

SIR,—In compliance with the Extract of the Minutes of Consultation of the 29th of August 1843, I have written to the Surveyor General of India, to forward all the copies of Magnetic and Meteorological Observations in his possession to the Secretary of the Asiatic Society, Calcutta. I hope that mean results will be considered sufficient for the present, since all the observations which are now sent to the Royal Society, will very soon be published. If I were to send complete copies of the Observations that I have the honor through you to send to the Hon'ble East India Company, the work would be just doubled, and it is as much as I can do with the aid of four assistants at the Observatory to complete the report without falling into arrears.

This will be understood if I just give an outline of the work at the Observatory: 12 instruments are observed every hour in the twenty-four, and registered in a rough observation book, from which they are entered in the day book, then abstracted in a book for the purpose, and finally fresh sheets are copied out, which are forwarded through you to the Hon'ble East India Company. Besides this, extra observations, the corrections of all the instruments, absolute determinations, the diurnal and hourly march of the instruments registered in curves; the anemometer papers and copies of our observations to all the Indian observatories, and I think it will be allowed that it

will be sufficient for the Asiatic Society for the present to receive the hourly and daily means of the instruments for the month.

Again, with reference to the tides, I send one complete copy of the curves described by the instruments, and the registry to the Hon'ble East India Company's Astronomer, Madras, for transmission through him to the Home Government, another complete copy I forward through the Honorable the Governor of the Straits to the Secretary to the Government of India, (Home Department.) Now if I might be permitted to make a suggestion, it would be to forward the remainder of the tides not yet dispatched, to the Secretary of the Asiatic Society, Calcutta, and those that have been already sent to Bengal to be handed over to him.

I hope I shall be excused in making these remarks, for it has appeared to me, that the Secretary to the Asiatic Society in calling for complete copies had neither an idea of the enormous additional labour that it would entail on the Observatories, (requiring for the purpose an extra assistant constantly copying,) nor that the whole of the observations would ultimately be published in England.

I intend to write to the same effect to the Secretary to the Asiatic Society, but I shall defer forwarding any abstracts until I have on this subject the opinion of the Most Noble the Governor in Council.

I have, &c.

Singapore, 25th April, 1844. (Signed) C. M. ELLIOT, *Lieut. Engineers,*
Superintendent Magnetic Observatory.

(A true Copy.)

(Signed) J. F. THOMAS,
Secretary to Government.

No. 380.

To J. F. THOMAS, Esq. *Secretary to Government, Fort St. George.*

Home Department, Marine.

SIR,—I am directed to acknowledge the receipt of your letter No. 199, dated the 6th instant with its enclosure, and to state, that for the reasons assigned by the Superintendent of the Magnetic Observatory at Singapore, the Governor General in Council concurs in opinion with the Most Noble the Governor in Council of Fort St. George, that the Asiatic Society at Calcutta should receive, as proposed by Lieut. Elliot, only a copy of the mean results of the Magnetic and Meteorological Observations, instead of copies of the entire observations. The necessary communication on the subject will be made to the Secretary to the Asiatic Society at Calcutta.

I have, &c.

Fort William, the 27th July, 1844. (Signed) T. R. DAVIDSON,
Offg. Secy. to the Govt. of India.

(True Copies.)

T. R. DAVIDSON,
Offg. Secy. to the Govt. of India.

Ordered, that it be explained that the Society, fully sensible of the steady desire of Government to forward its views in all matters of utility, was

only desirous of such mean results, or details as could be afforded without inconvenience.

Read the following letter :—

No. 2,037, of 1844.

From F. CURRIE, Esq. Secretary to the Govt. of India, to the Secy. to the Asiatic Society, dated Fort William, 24th August, 1844.

Foreign Department.

SIR,—By direction of the Governor General in Council, I have the honor to transmit to you for such notice as the Society may deem it to merit, the accompanying copy of a report by Mr. B. Woods, of his proceedings during his late Tour on the Nagp frontier.

I have the honor to be, Sir,

Fort William, the 24th Aug. 1844.

Your most obedient servant,

F. CURRIE,
Secy. to the Govt. of India.

The paper was referred to the Editors of the Journal.

Read the following letter addressed under orders of the Meeting of July, (see proceedings,) to the Secretary to the Government of Bengal with its reply :—

The Secretary to the Government of Bengal, Home Department.

SIR,—By desire of the Honorable the President and Committee of Papers of the Asiatic Society, and in pursuance of a resolution passed at the Meeting of the 3d instant, I have the honor to request, that you will be pleased to submit to the Honorable the Government of Bengal, the accompanying specimen pages and certificates relative to a proposed Sanscrit Dictionary in Bengali characters, to be entitled the *Sabda Ratnakar*, the author of which is Baboo Goorooopresad Roy, a Pundit of much eminence, and for which he, as well as the Asiatic Society, respectfully solicit the support and patronage of Government, to enable him to carry it through the press. A copy of the Baboo's letter to the Society will be found with the certificates, and the resolution of the Asiatic Society in reference to it is noted in the margin.

The Society would desire respectfully to represent to H. H. that the work is one of immense labour, and will be of the highest utility to Bengalee students of Sanscrit, comprising as it does in itself, the essentials of several other works now only existing in MSS., and expensive and difficult to obtain, and that thus it will be in an educational point of view of most essential service to the native community, and that the Society indeed would have been happy to have given it a larger share of support, could it with reference to existing engagements and claims have done so, and were the work one of a higher, and more classic standard.

It begs further, with deference, to suggest, that the Government might probably with much public advantage confer copies of it, when published, as prizes in the Public Colleges, for which purpose it is a work most excellently adapted.

I am desired to add, in conclusion, that the Society is not aware of any modern work in Sanscrit literature which has appeared for many years, better deserving the sup-

port of the Government of India, with reference to purposes of practical utility in the study, (with the native community,) of a language so important to them.

I am, Sir,

Asiatic Society's Rooms, 12th July, 1844.

H. TORRENS,
V. P. and Secy. Asiatic Society.

No. 582.

From the Under-Secretary to the Govt. of Bengal, to H. TORRENS, Esq. Secretary to the Asiatic Society, dated Fort William, 27th August, 1844.

Education.

SIR,—I am directed to acknowledge the receipt of your letter, dated the 12th ultimo, and to state, that the Deputy Governor regrets that the Government cannot subscribe for any copies of the proposed Sanscrit Dictionary, specimen pages of which accompanied your communication.

I have the honor to be, Sir,

Your most obedient servant,

CECIL BEADON,
Under-Secretary to the Government of Bengal.

Read the following letter from Mr. W. C. Colton, Assistant Librarian, presenting a mummied hand and curious knot of a tree, (forming, naturally, the figure of an animal,) to which it refers :—

To H. PIDDINGTON, Esq. Sub-Secretary, Asiatic Society.

SIR,—I beg leave to present to the Asiatic Society's Museum, the accompanying hand, taken from an Egyptian Mummy in one of the pyramids near Cairo, and supposed to be about three thousand years old.

Also, a curious specimen of a knot taken from a tree, in the Island of the Mauritius, in the year 1840.

I have the honor to be, Sir,

Your obedient servant,

Calcutta, 11th September, 1844.

W. C. COLTON.

Read the following letter from the Rev. J. J. Moore, Secretary Agra School Book Society to the Sub-Secretary :—

No. 239.

MY DEAR SIR,—I am happy to say that the two boxes of books have reached me in safety, with the exception of 9 which are injured by water and have to be rebound, however this matters little. The books for the Maharaj of Jodhpore, I have forwarded to the Political Agent, Capt. French. The cost of them I shall remit to you so soon as realized.

The bill against the Society I hope to remit a draft for, at the close of the month. I am much obliged to you for the kind trouble you have taken.

Believe me, your sincerely,

15th August, 1844.

J. MOORE.

Read the following letter from Dr. Mouat :—

To H. TORRENS, Esq.

MY DEAR TORRENS,—Would the accompanying articles be of any use to your Museum? Intrinsically they are of no value, but as they were both brought from the field of Punniar, they may be esteemed worthy of preservation. The matchlock was

taken from a Mahratta by a soldier of the Queen's 50th at Punnar, who I believe bayoneted him. The ball was one fired from the Battery stormed by the 50th, and fell within a foot of my brother, who had it picked up and preserved as a relic of the fight.

I am collecting, or rather attempting to do so, a small Mineralogical and Geological Museum for the Medical College, and have sent home for a complete set of European specimens, classified and arranged, which I hope will arrive here shortly.

Do you think the Asiatic Society would object to make over to us any triplicate or quadruplicate specimens which may not be worth preserving by them, and are not of sufficient value to send home ; for we must be moderate in our expectations, and be content with small beginnings. I hope ultimately to see complete courses of Geology and Mineralogy given in this College, that our Students may obtain some acquaintance with these highly interesting and in this country important branches of science.

Very truly yours

Medical College, 30th August, 1844.

FRED. J. MOUAT.

Resolved, that the Curator in the Geological and Mineralogical Departments be desired when the arrangements of the collections will admit of it, to assist Dr. Mouat's views.

The Sub-Secretary, as Curator, stated, that (see Journal Vol. X, p. 172, Proceedings for May 1841,) he had already pointed out to the Society, this as a very proper method of disposing of spare specimens.

Read the following letter from Dr. A. Sprenger, B. M. S. :—

To the Secretary of the Asiatic Society of Bengal, &c. &c. &c.

MY DEAR SIR,—I beg leave to send you an article for the Journal of the Asiatic Society. If you have plenty of space in your present number, I shall make it longer, adding passages which show from whence the Arabs obtained the principal articles of commerce, as for instance paper, which was manufactured at Samarcand, &c. Print this part, and let me know about the rest.

I am, your very faithfully,

Chinsurah, August 28, 1844.

A. SPRENGER.

The Secretary stated, that as the MSS. was much interlined, he had placed it in the hands of a good copyist, and would first return it to Dr. S. for his revision before placing in the hands of the printers.

The Curator Geological and Mineralogical Departments stated, that having been for the most part occupied in preparatory arrangements in the Laboratory, and having nothing of note to minute, he had deferred making any report for the present month.

Proceedings of the Asiatic Society for the month of OCTOBER, 1844.

The usual monthly meeting of the Society was held on Wednesday evening the 2nd October, 1844, at 8 P. M.

The Honourable Sir H. Seton in the chair.

The following members proposed at the last meeting were ballotted for, and declared duly elected:—

A. C. Barwell, Esq. B. C. S.

John Owen, Esq.

Corresponding member, J. McGowan, Esq. Ningpo Hospital.

And the following new members were proposed:—

T. R. Davidson, Esq. B. C. S., proposed by H. Torrens, Esq. and seconded by H. Piddington, Esq.

Allan Gilmore, Esq., ditto ditto ditto.

J. P. McKilligen, Esq. ditto ditto ditto.

Captain T. Marshall, proposed by S. G. T. Heatly, Esq. and seconded by H. Torrens, Esq.

Read the following list of books presented, exchanged and purchased:—

Books presented.

1. Meteorological Register for August, 1844.—From the Surveyor General's Office.
2. Journal of the Royal Geographical Society of London, Vol. 13th, part I, 1843, London, 8vo.—By the Society.
3. *Extrait du Rapport Annuel fait à la Société de Géographie de Paris, 1839.*—By the Society.
4. *Accroissement de la Collection Géographique de la Bibliothèque Royale, en 1841.*—By the Geographical Society.
5. Journal of the Bombay Branch Royal Society, No. 7, May 1844.—By the Society.
6. Journal of the Agricultural and Horticultural Society of India, vol. iii, part i. By the Society.
7. Oriental Christian Spectator, vol. 5, No. 9, September 1844.—By the Editor.
12. Madras Journal of Literature and Science, No. 30, June 1844.—By the Society.
8. Inquiry into the Means of Establishing a Ship Navigation between the Mediterranean and Red Seas, by J. Vetch. Second edition, London, 1843.—By the Author.
9. *Notation Hypsométrique ou Nouvelle Manière de Noter les Altitudes*, par M. Jomard, 1840.—By the Author.

Books exchanged.

10. *Annals and Magazine of Natural History*, Vol. 14, Nos. 88 and 89, July and August, 1844.

11. *The Athenæum*, Nos. 871 to 874, July 1844.

Read the following Proceedings of the Committee of Papers :—

At a Meeting of the Committee of Papers held on 13th September at half-past 10 A. M.

Present.—The Honourable Sir J. P. Grant, the Honourable Sir H. Seton, Lieut. Col. Forbes, C. Huffnagle, Esq., S. G. T. Heatly, Esq., and Rev. Dr. J. Hæberlin.

Resolved.—That the Members of the Society be informed by Circular, that at the next Meeting a President to the Society will be elected.

2nd. That a deputation having been offered to wait upon the Hon'ble W. W. Bird, and his occupations having interfered with his receiving it at the hour proposed, the Secretary be instructed to draw up a suitable address to our late President, requesting him to make choice of an artist of reputation in England, by whom his Portrait may be taken of the Kit Cat size, to be placed in the Meeting Room of the Society, with those of his predecessors in office.

J. P. GRANT, *Chairman.*

And letters as follows :—

To the Honorable W. W. BIRD, Esq. late President of the Asiatic Society of Bengal.

HONORABLE SIR,—I have been instructed to apprise you, that the letter of resignation of your office of President, which I had the honour to submit at the last meeting of the Society, was received with the expression of the regret of its members, at the cessation of your connexion with a body to which you have belonged for more than three and thirty years.

The Society has, I am instructed to state, a lively sense of the value of the support and assistance you have afforded it during the time that you have held the office of its President. You, Sir, have by constant supervision of our Proceedings encouraged and stimulated the work in which the Society has been engaged, and by a judicious use of the opportunities available in your high official situation you have put the Society in a position to diffuse the results of scientific enquiry conducted by the Government, among its members, and the scientific world at large.

Anxious to possess a memento of you, the Society instruct me to request, that you will do them the favour of selecting an artist of good reputation in England, by whom your Portrait may be painted in the Kit Cat size, for the purpose of its being placed in the Meeting Room of the Society, together with those of your predecessors in the Chair of President.

The Society instruct me to beg, that you will take the further trouble of referring the artist you may select to our Agents, Messrs. W. H. Allen and Co. Lendenhall Street.

The Society, in conclusion, direct me to express their thanks and acknowledgments for the kind urbanity with which you have at all times met them, for the lively interest

which you have evinced in their pursuits, and for the steady maintenance which you have invariably afforded to their interests as a constituted body.

I am, Honorable Sir,

Your most obedient servant,

H. TORRENS.

To H. TORRENS, Esq. Vice President and Secretary to the Asiatic Society of Bengal.

SIR,—I beg to acknowledge the receipt of your letter of the 13th instant, communicating to me the thanks of the Society, for the support and assistance which I afforded them during the time I had the honor to hold the office of President, and requesting, that I would allow my Portrait to be painted for the purpose of being placed in the Meeting Room of the Society, together with those of my predecessors in the chair.

I beg you will express to the Society how sensible I am of the honor they have done me, and how gratified I feel, that the little I have been able to do for the maintenance of their interests, should be considered deserving of so flattering an acknowledgment. With every wish for the continued success of their labours.

I have the honor to be, Sir,

Your most obedient servant,

Calcutta, 17th September, 1844.

W. W. BRID.

The Society then proceeded to the election of a President, when the Honourable Sir Henry Hardinge being proposed from the chair, and seconded by Lieut. Col. Forbes, was unanimously elected. It was arranged, on the suggestion of Col. Forbes, that the Secretary should be requested to ascertain from the Private Secretary, when it might be convenient for the Honourable the Governor General to receive a deputation from the Society of such members as might please to form it; and that Sir Henry Seton, as the Vice-President in the chair this evening, be requested to conduct the deputation.

Read the following report and letters submitted to the Society by the Sub-Committee for publishing Sir A. Burnes' drawings:—

The Committee for publishing Sir A. BURNES' Drawings, with reference to their first report to the Society in July 1843, have now the honour to present a farther report as follows:—

The Committee having, as authorized, added to their numbers the undermentioned members:—

Rev. J. Hæberlin,

S. G. T. Heatly, Esq.

And being now composed of the following members; viz.

H. Torrens, Esq., Charles Hufnagle, Esq., Rev. J. Hæberlin, S. G. T. Heatly, Esq., and Henry Piddington Esq., Secretary to the Committee.

Meeting on Wednesday, the 18th September, 1844.

And all the Members and Secretary being present, proceeded as follows :—

1. Read for the information of the new Members, the report of July 1843, and the following Memorandum of the state of the trust up to the present date.

Memoranda for Committee on Sir A. Burnes' Drawings.

1. The Committee was named in March 1841.—Journal, Vol. IX. p. 1130.
2. It decided specially, with reference to selections from the drawings, that, as the true object of the trust confided to the Society by Government was undoubtedly to diffuse as much as possible the knowledge which Government had acquired at a heavy expence, and also as matter of justice to the labours of the Envoy and Naturalist, as well as of convenience to future naturalists and travellers in the valley of the Indus and Affghanistan, that the whole of the drawings should be published ; except perhaps some few very common ones, if any such were found.
3. This was duly reported and confirmed at a general meeting, but it has not been placed upon record. It is supposed to have been confirmed at the meeting of April 1841, See Journal, Vol. XI, p. 72.
4. The preparation of the plates was continued, and with extreme care, till Mr. Ballin's death, when difficulties gradually arose which have not yet been adjusted, but shortly will be so, without, it is hoped, any loss to the Society's interests.
5. Mr. Blyth arrived in September 1841, taking charge of the Museum on the 6th September, (Vol. XI, p. 755,) and this undertaking amongst other matters was then specially brought to his notice, and the drawings and finished lithographs shewn him, their cost explained, &c. He was also shewn that the Acting Curator, Mr. Piddington, had indexed the whole of Dr. Lord's notes in readiness for him to commence on the letter-press.
6. The notes of Dr. Lord were subsequently duly made over to him by the Secretary ; and then, and on more than one subsequent occasion, when Mr. Blyth objected to the drawings as inaccurate, and as deviating from already known types, and proposed *correcting* them, it was distinctly explained to him that, in such case, the Society would be guilty of a breach of trust, and even of a scientific fraud ; since it would publish as *the drawings* made on Sir A. Burnes' Missions, pictures of something which were not so : and that, as well known to him, the now anxious search of all European naturalists is exactly to find the original drawings from which local fauna (ornithæ) had been published, in order to correct these flourishes, and interferences of artists and naturalists ; who, to make better pictures, and reduce the birds (principally) to their fancied types and systems, had in many instances created enormous confusion, deprived the original observers of their due credit for active research and accuracy, and had even made them pass, at least as careless persons, if not as impostors ; when, on the contrary, the mischief and imposture was the work of the naturalist editors, publishers and artists.

6. The Reports of the Committee in July 1843, Proceedings, Vol. XI, p. 615, will shew in all its relations that the Committee has not been to blame, and how far the Society's wishes and orders have, or have not, been acted upon.

7. The Secretary to the Committee deems it his duty to state to the Committee, that with the concurrence of the Society, the whole of these drawings, except such as were required for the artists, were placed under lock and key, and under the special charge of the Librarian, with strict injunctions that they were only to be shewn or delivered by special order, as in the case of the Mackenzie collection and other rare and valuable drawings ; the finished ones being of course at Mr. Blyth's disposition. He now learns that they have been all placed in Mr. Blyth's hands.

Dr. Roer being called in, says he knows nothing of Dr. Lord's notes, which have never been in his possession.

Resolved,—That a letter be written to Mr. Blyth, requesting within a given time, (Saturday next,) a report as to the progress made in the text for Sir A. Burnes' drawings, and as to whether Dr. Lord's notes have been recovered.

The following letter was therefore addressed to Mr. Blyth :—

To E. BLYTH, Esq. Curator Asiatic Society.

SIR,—A meeting of the Committee for the publication of Sir A. Burnes' drawings of the Zoology of the Indus, desires to enquire, what progress you have made in the letter-press to accompany those drawings.

I am further to enquire, with reference to a statement made by you that the notes on those drawings by Dr. Lord are lost, whether you have recovered those notes, the Committee having ascertained that the notes were never in Dr. Roer's possession, and it having been proved that they were delivered to you by me, and have not, in so far as any evidence before the Committee goes to shew, been ever out of your hands.

On these points the Committee request a specific answer in writing before Saturday next the 21st instant, to enable the Committee to take early cognizance of the question.

I have, &c.

H. TORRENS.

Committee adjourn to Wednesday, 25th September, 1844.

At an adjourned Meeting of the Committee for the publication of Sir A. Burnes' Drawings, held on the 25th September 1844, at the Society's Rooms, at half-after 10 o'clock A.M.

Present.—Rev. J. Haerberlin, Chas. Hufnagle, Esq., S. G. T. Heatley Esq., H. Torrens, Esq., V. President and Secretary, H. Piddington, Secretary to the Committee.

Read letter from Mr. Blyth.

H. TORRENS, Esq. Secretary to the Asiatic Society.

SIR,—With reference to the first question proposed to me in your note of the 18th ultimo, I beg to inform you, that from the commencement of the present month, I have devoted as much time as my other and stringent duties would permit of to the preparation of the letter-press to accompany the publication of Sir A. Burnes' draw-

ings; and that sufficient progress has been made to warrant my undertaking to complete it in the course of a few weeks.

The MS. notes, however, I regret to add, have not been found up to the present time, but they can scarcely have been abstracted from the Museum. Their value was, indeed not great, as they consisted almost entirely of descriptions and slight dissections of well-known species, the localities of which were alone new, and these are further noted on the drawings: but I am surprised beyond measure at the non-appearance of the papers, and do not offer the foregoing opinion regarding their value as any extenuation of the annoying circumstance of our not being at present able to find them.

I have, on several occasions, looked over the papers, with the intention of preparing for the press what little could be extracted from them; and to the best of my recollection have always returned them to the charge of our late Sub-librarian Mr. P. Bouché, since the period of whose leaving I have never consulted the MS. in question, and had no idea but that it would be immediately forthcoming when I lately applied for it.

I have the honor to be, Sir,

Your obedient servant,

Asiatic Society's Museum, September 21, 1844.

E. BLYTH.

Resolved,—The letter from the Zoological Curator having been read, the Sub-Committee deem it necessary to place on record for report to the Society the expression of their extreme regret and surprise at the annoying circumstance, as noted by Mr. Blyth, of the non-appearance of these notes. The Sub-Committee further desire to observe, that Mr. Blyth's assurance that the preparation of the letter-press will be completed in a few weeks is the most satisfactory declaration which it has yet fallen to their lot to report with reference to the important duty confided to them.

The Sub-Committee propose in consequence of the above assurance, to proceed with the printing of the letter-press as it is prepared, in order that the plates already finished may be published at the earliest possible date.

The report of the Committee was considered as satisfactory, and adopted by the meeting.

Read the following letter from Government, and extract of dispatch accompanying it:—

Duplicate.

No. 2288.

From the Under Secretary to the Government of Bengal, to the Vice President and Secretary to the Asiatic Society, dated Fort William, 12th September, 1844.

SIR,—I am directed to transmit the accompanying copy of a letter from the Hon'ble the Court of Directors, No. 15, dated the 29th May last, with enclosure; also a transcript of a Circular addressed to the Civil Officers in this Presidency, and to

request that the Asiatic Society of Calcutta, will supply the Government with such information regarding the antiquities, the state of the liberal and mechanic arts, and the native customs of this Presidency, as the Museum and collections of the institution may afford; besides suggesting such means as may occur to the Society, for enabling Government the better to comply with the wishes of the Hon'ble Court.

I have the honor to be, Sir,

Your most obedient servant,

(Signed) A. TURNBULL,

Under Secretary to the Government of Bengal.

PUBLIC DEPARTMENT.

No. 15 of 1844.

Our Governor General of India in Council.

PARA. 1.—We forward to you the copy of a letter dated 8th April 1844, addressed to us by the Royal Asiatic Society of Great Britain and Ireland, bringing to our notice the state of those interesting monuments of Antiquity, the Cave Temples of India, and soliciting our interposition to preserve them from all such causes of injury and decay as may be obviated by means within the authority of our Indian Government. With reference also to the peculiarly perishable nature of the paintings in the Caves of Ajunta, the Society is anxious that carefully executed copies of them should be made before it is too late, and as those drawings are the only authentic records that exist of many of the usages of the people of India at the probable date of their execution, it would no doubt be little creditable to an enlightened Government to suffer them to perish without an effort to perpetuate their subjects by faithful and artistic delineation. We therefore recommend it to your special consideration to determine upon and adopt such measures, either by the occasional employment of some of our talented officers, when the calls of the public service permit of it, or by such other means as may appear to you to be best calculated to ensure the procuring of good copies of the paintings in the Caves of Ajunta, and of drawings of the other Caves: using such means also for the protection of the Caves themselves against dilapidation, as may be consistent with any use to which they may have been legitimately applied.

2. We take this opportunity also of apprising you, that we are desirous of collecting a series, as ample as possible, of delineations (accompanied by short explanations) of various objects of interest and instruction, illustrative of the state of the liberal and mechanic arts in India, and of the phases, character and condition of its various tribes and people, comprising architecture, implements, costumes, &c. for our library, frequent reference being made to it, (at present with little advantage,) for such sources of information. We should think it possible, that moderate encouragement on your part would readily obtain an abundant supply of such materials from different individuals in the service of the Company.

3. Absolute accuracy being essentially necessary in the drawings, and the use of Dollond's Camera Lucida ensuring that indispensable object, we shall transmit without delay to the Government of each of the presidencies three of these instruments.

We are, &c.

(Signed) John Shepherd,
 „ Henry Willock,
 „ W. H. C. Plowden,
 „ J. W. Hogg,
 „ John Loch,
 „ Russell Ellice,
 „ John C. Whiteman,

(Signed) Henry Alexander,
 „ Robert Campbell,
 „ H. Shank,
 „ John Masterman,
 „ C. Mills,
 „ W. H. Sykes.

London, 29th May, 1844.

The Royal Asiatic Society of Great Britain and Ireland, to J. C. MELVILL, Esq.

14, Grafton Street, Bond Street, London, 8th April, 1844.

SIR,—The Royal Asiatic Society have had before them at their late meetings, a highly valuable and interesting paper on the Cave Temples of India, by James Fergusson, Esq., a gentleman of great research and knowledge in Architecture, who with a professional zeal worthy of all commendation, personally visited the most remarkable specimens of those singular structures, as well in Behar and Cuttack, where they are found in the earliest and most simple forms, as in the Western side of the Peninsula, where the most highly wrought and ornamental examples are extant. It is the principal object of Mr. Fergusson's paper to classify those remarkable structures according to the purposes for which they appear to have been designed, the parties by whom they were executed, and the dates assigned to them.

Mr. Fergusson is fully aware of the great value of the improved knowledge attained to in the reading of the ancient characters in which inscriptions are written on the rocks and temples of India; but he justly considers the ascertainment of a date, by an inscription not to be conclusive as to the age of the excavation, as where the character in which the inscription is written is more modern than the architectural features of the structure. In such cases, it is probable that the inscription denotes a new appropriation or use, rather than the original design or execution. He therefore applies to the examination of their age the test of architectural character, according to certain principles which he states in his able paper.

Mr. Fergusson is of opinion, that the earliest of the Cave Temples are the Buddhist, which he divides into two great classes, the Viharas or Monastic, and the Chaitya or Temple Caves. Among the most ancient Buddhist Caves, after those in the neighbourhood of Gya and in Cuttack, he ranks a very remarkable series, which lying out of the road ordinarily travelled, and being difficult of access, have been seldom visited, and are little known, those of Ajunta in Berar.

The first notice of these Caves is to be found in a paper by Lieutenant Alexander, printed in the 2d volume of the Transactions of the Royal Asiatic Society. The writer there remarks, (p. 365): "In most of the Caves, to compensate for the want of profuse entaille and sculptures are paintings in fresco, much more interesting, as

exhibiting the dresses, habits of life, pursuits, general appearance, and even features of the natives of India, perhaps two thousand or two thousand five hundred years ago, well preserved and highly colored, and exhibiting in glowing tints, of which light red is the most common, the crisp haired aborigines of the sect of Buddhists." He adds further on, "the high antiquity (of Buddhism,) may be satisfactorily proved both from the paintings and sculptured figures in these excavations, which exhibit traces of the existence of a woolly-haired race, now no where found on the Indian continent." Again, (p. 368): "In the gallery or passage behind the pillars are fresco paintings of Buddha, and his attending supporters with *chowries* in their hands. The thickness of the stucco is about a quarter of an inch. The colors are very vivid, consisting of brown, light red, blue and white; the red predominates. The coloring is softened down, the execution is bold, and the pencil handled freely, and some knowledge of perspective is shewn. The figures are two feet and a half, or three feet in height.

(P. 369.) "The paintings in many of the Caves represent highly interesting and spirited delineations of hunting scenes, battles, &c. The elephants and horses are particularly well drawn. On the latter two men are often seen mounted. Ram and cock fights I observed in one of the excavations. The spears are peculiar, having three knobs near the head, and there was an instrument resembling a lyre with three strings. I observed something like a zodiac; but not at all resembling the celebrated one at Dendera."

The following passages in Mr. Fergusson's paper relate to these highly interesting relics of Hindu antiquity:—

"After crossing the valley of the Taptee from the North, you approach a Ghânt of some 500 or 600 feet in height, supporting the table land of the Dekhan. The upper line of the Ghant is flat and regular, and the wall, if I may use the expression, tolerably even, except in some places, where it is broken by ravines which extend for a considerable way into the table land above. It is in one of these ravines that the Caves of Ajcend are situated. The entrance to the ravine is nearly half a mile in width, but is gradually narrower, as you wind up it, till it terminates in a cascade of seven falls, called the Sat-Koond, the last of which may be 100 feet high, the others, together 100 more."

"Immediately below the fall the ravine makes a sudden turn to the right, and it is in the perpendicular cliff, forming the outer side of the bend, and facing the Koond, that the caves are situated, the whole series extending, as near as I can guess about 500 yards from North to South-East. * * * * *

"No. 16. The whole of this Cave, the largest, has been covered with stucco and painted, and many of the smaller paintings on the pillars and in the panels of the roof of the aisles, remain, consisting of figures of Buddha and his disciples in various attitudes, rosettes and other ornaments; but owing to the ruined state of the front, the rain apparently has beat in, and destroyed the larger subjects. There are several inscriptions painted on the plaster, and though none remain sufficiently entire to be transcribed, yet sufficient remains to shew, that the characters are those pre-

valent subsequent to the Christian era. On the exterior face of the Cave, however, but very high up, is an inscription of some length in the pure *Nath* character, which would at once give an antiquity to the excavation of about 100 or 200 a. c. as far as such evidence can be relied on.

“ No. 17, generally called the Zodiac Cave, very much resembles the last described in almost every respect. Its dimensions are 64 feet by 63, and it has 20 pillars disposed as in the other. It is not, however, so lofty ; and the details of the pillars are by no means so graceful or elegant as in No. 16. The paintings, however, are much more entire, and though the colours in some places are a good deal faded, the subjects can generally be made out.

“ On the right hand wall as you enter, a procession is painted : three elephants issuing from a portal, one black, one red or rather brown ; and the third a white one, which seems the principal one of the group, shewing how early arose the predilection for these animals, which still exist among the Burmese and Siamese of the present day. Chattras and flags are borne before them ; and a large retinue of men armed with spears, swords and shields follow them.

“ On the back wall is a hunting scene, in which a lion powerfully and well drawn, forms the principal object of attraction. There are also deer and dogs, and men on horseback and on foot without number.

“ In the verandah to this Cave are some singularly interesting paintings ; at one end a circular one which I at first took for a Zodiac, though on further examination I gave up the idea. Its centre is divided in eight compartments, and the outer circle into sixteen or seventeen. Each of these compartments is crowded with small figures ; but what the subject is, I could not make out.

“ Over the door are eight Buddhist figures sitting cross-legged, the first four are black, the fifth fairer ; the next is still more so ; the last fair and wearing a crown. It is remarkable that there are more black people painted in this Cave than in any of the others. The women, however, are generally fair ; and the men all shades, from black to a European complexion. The roof is painted in various patterns, not at all unlike those still existing in the baths of Titus, though in an inferior style of art. I had not time, even if I had had the ability to copy these interesting paintings, and I fear any one who now visits them, will find, that much that I saw has since disappeared.

“ The style of these paintings cannot of course bear comparison with European painting of the present day, but they are certainly superior to the style of Europe during the age in which they are executed. The perspective, grouping and details are better, and the story better told than any paintings I know of, anterior to Oragna and Fiesole. The style, however, is not European, but more resembles Chinese art, particularly in the flatness and want of shadow. I never, however, even in China, saw any thing approaching its perfection.

“ I looked very attentively at these paintings to try and discover if they were fresco paintings, or merely water colors laid on a dry surface, but was unable to decide the point ; the color certainly is in cases absorbed into the plaster ; and I am

inclined to think they may have been painted when it was first laid on, and consequently moist; but I do not think it could have been done on the modern plan of painting each day all the plaster laid on that day."

From the remarks above quoted, as well as from the personal knowledge of several Members of the Royal Asiatic Society, no doubts remain that the Caves of Ajunta contain unique specimens of Hindoo painting of an age anterior to the Christian era, and it is equally certain that time, and the use made of these places by faquirs and others, Mahomedan and Hindoo, are gradually destroying their beauty, and will soon obliterate every trace of those remains which are valuable, not only as specimens of early art, but as exhibiting the figures and habits of races long passed away, and important therefore, as illustrative of the early history of India.

The Royal Asiatic Society are anxious that before any further destruction of these singular paintings shall be effected, means may be taken to have faithful copies of them made, which they would gladly publish in their Journal, and the Council have directed me to lay the subject before the Honourable Court, with the expression of their earnest desire and hope, that instructions may be sent to the proper authorities in India, to employ some Officer in their service, as early as the opportunity shall present itself, to take such copies of them as may preserve the remembrance of these most curious and valuable remains of ancient art.

I have the honour to be, &c.

(Signed) R. CLARKE, *Honorary Secretary.*

(True Copies,) (Signed) T. R. DAVIDSON,

Offg. Secretary to the Government of India.

Circular from the Under-Secretary to the Government of Bengal, to Civil Authorities.

Dated Fort William, September, 1844.

SIR,—I am directed by the Deputy Governor of Bengal to forward the annexed copy of Correspondence noted in the margin,* and with reference to the wishes of the Honourable Court of Directors therein expressed, to request that you will report whether any Cave Temples, or other antiquities exist in the ——— under your charge; and if so, that you will suggest means for preserving them from injury or decay.

2. You will of course understand, that the latter instruction only applies to such temples or buildings as are no longer used as places of worship, and have no responsible guardian appointed for their preservation. You will be careful likewise to explain the object of any researches or enquiries you may institute, in consequence of these orders, so as to prevent any misconception regarding them, on the part of the native community.

I have the honour to be, &c.

(Signed) A. TURNBULL,

Under-Secretary to the Government of Bengal.

(True Copies,) A. TURNBULL,

Under-Secretary to the Government of Bengal.

* Dispatch No. 15, of 29th May 1844, from the Honourable the Court of Directors with Enclosures.

It was stated by the Secretary, that he had thought it right to circulate these to the Committee of Papers, who were unanimously of opinion, that it was incumbent on the Society to do all in its power to forward the views of the Honourable the Court of Directors.

Mr. Piddington with a few remarks on the necessity of employing a professional artist who alone he thought, (without any disparagement to the talents of Officers in the services,) could do justice both to the letter and the spirit of these wonderful delineations, in which so much depended not on mere copying, but upon the style of drawing and the tact of seizing what was characteristic and illustrative, especially in what related to the human figure, and to manners and customs, proposed,

"That the Society do address Government, pointing out strongly the great importance of employing a professional draftsman for the copying of the Cave Paintings, as desired by the Royal Asiatic Society."

This was seconded by S. G. T. Heatly, Esq. and carried.

The Secretary then proposed, seconded by Lieut. Col. Forbes, that the following gentlemen; viz.

W. B. O'Shaughnessy, Esq., Lieut. Col. Forbes, R. Frith, Esq., J. Fulton, Esq., Chas. Hufnagle, Esq., Revd. J. Hæberlin, E. Blyth, Esq., H. Piddington, Esq., S. G. T. Heatly, Esq., A. Webb, Esq. M.D., Capt. Marshall, Capt. Latter, H. Torrens, Esq. Secretary, be requested to act as a Special Committee, for carrying out the views of the Society in aid of the request of Government, and that they have power to add to their numbers, which was also agreed to.

Read the following letter in reply to the application made to Government by the Society, on the motion of the Rev. J. Long, for copies of any Medico-Topographical reports in possession of Government:—

No. 475.

From T. R. DAVIDSON, Esq. Officiating Secretary to the Government of India, to H. TORRENS, Esq. Vice President and Secretary, Asiatic Society, dated the 21st September, 1844.

Home Department.

SIR,—In reply to your letter dated 8th instant, I am directed to state, that the works required by the Society, are not amongst the records of this office.

I have the honor to be, Sir,

Your most obedient servant,

Council Chamber, the 21st September, 1844.

T. R. DAVIDSON,

Officiating Secretary to the Government of India.

Read the following letter from the Society's London Agents :—

HENRY TORRENS, Esq. *Secretary to the Asiatic Society of Bengal.*

SIR,—We beg to inform you, for the information of the Members of the Asiatic Society, that a bust of Mr. B. H. Hodgson has been commenced upon, (agreeable to the instructions conveyed in your letter of March last) by a Mr. Thornicroft, a talented Sculptor, who has been highly commended to Mr. Hodgson and to ourselves, by a party very competent to judge of such matters, having employed Mr. Thornicroft himself. The cost of the bust will be £84, in addition to which, there will be the shipping charges and insurance. As this sum is much less than the estimate given us, we beg to enquire if you think it would be desirable to appropriate any portion of the balance in the purchase of a Pedestal for the bust to stand upon. The cost of a suitable one of fine marble would be under £20; in scagliola, it would not be more than half that price. We shall be obliged by the favor of a reply by return of the Mail, as by that time the bust will be nearly completed.

We have the honor to be, Sir,

Your faithful servants,

London, 2nd August, 1844.

WM. H. ALLEN and Co.

It was decided, that as a pedestal for the bust had been already placed in the Society's Meeting Hall; the cost of importing one was needless.

Read the following acknowledgment and advice of remittance from the Secretary Agra School Book Society :—

H. PIDDINGTON, Esq. *Calcutta.*

MY DEAR SIR,—I have the pleasure to send a draft on Calcutta for Rs. 548 : 6 : 6, the amount of the Asiatic Society's Bill against the Agra School Book Society. The cost of the Sanscrit Books for the Maharaja I hope also to remit soon, as I am in communication with Captain French on the subject.

I hope to hear that you have succeeded in procuring me a copy of the Sanscrit Euclid, believe me,

Yours,

J. MOORE.

4th September, 1844.

Read the following letter from Lieut. Yule, B. E. to the Sub-Secretary :—

H. PIDDINGTON, Esq., *Calcutta.*

MY DEAR SIR,—You were kind enough to give insertion in the Asiatic Society's Journal, to the two notes on the iron of the Kassia hills, which I forwarded two years ago, when on the point of leaving that part of the world. Having collected a good many miscellaneous notices of the people and country during an abode of two seasons in it, it has lately struck me, that some of them were sufficiently curious to be worth publishing, and so little has been given to the public on the region (which is so interesting to me that I cannot well judge what interest it may have for others,) that

I cannot but suppose much of these notes must be new. I should be much gratified if the sheets enclosed should be thought worth printing in the Journal. If not kindly return them.

Kurnaul, September 12, 1844.

H. YULE

The beautiful and spirited pen and ink drawings which accompanied this valuable paper were greatly admired, and the paper was handed to the Editors of the Journal for early publication. On the suggestion of Lieut. Col. Forbes it was agreed to, that the Secretary should address the Military Board, requesting copies of Lieut. Yule's reports, plans and sections of the country about Chirra Poonjee.

The Secretary announced to the meeting the death of Mr. W. C. Colton, the Assistant Librarian, whose conduct during the time he had been employed, was most creditable, and rendered his loss one much to be regretted.

The Secretary presented, on the part of Dr. Roer, a translation of the Vedanta Sara, which was referred to the Editors of the Journal for publication.

The Secretary presented, on the part of J. Avdall, Esq. an Essay "On the Invention of the Armenian Alphabet," which was also referred to the Editors of the Journal.

The Secretary presented from Dr. Spilsbury, Superintending Surgeon, Sagor Division, for the Museum,

Two large silver coins, dug up at Baitool.

Two smaller coins, dug up at Hoshungabad.

A small gold coin, dug up at Jubbulpoor.

Read a paper from Captain J. W. Abbott, Artillery, Dum Dum, giving some account of the fall of an Aerolite in Khandeish. The specimen was referred to Mr. Piddington, as Mineralogical Curator, for examination and report, and the paper for incorporation with the report.

The Secretary also presented on the part of Captain Abbott, a paper "On the occurrence of Granite in the bed of the Nurbudda," which was referred to the Editors of the Journal for publication.

The Secretary also presented on the part of Col. Stacy, C. B., through Captains Wroughton, B. N. I. and Wintle, B. N. I., two splendid speci-

mens of petrified bone, probably part of the Femur of the great fossil elephant or mastodon, and a carved monumental marble slab which had formed the head-stone of a Mussulman grave. This specimen is a good one of its kind, the sculpture being elegantly executed, and the stone furnishing interesting evidences of a practice formerly common, but now extinct among the Mussulmans of India, the placing head-stones, namely, in memory of deceased persons.

Read the following letter from Captain Macleod, Assistant Commissioner, Moulmein :—

MY DEAR TORRENS,—About two years ago I sent you two images like the present from the Mekkhara Prince at Amaropoor, they were found at Rangoon; no notice having been taken of them, his Highness has sent down two more. He has likewise sent me to be forwarded to you a coin (silver) found at a place called Kaleng. It is Hindoo no doubt, there being no coin in Burmah. He likewise has sent a box, containing some black and yellow earths, a parcel of stones, a bottle of water, which is labelled, "Cure for Itch," or something to that purport, "Falling on both sides of the Khand Ywa hills." I believe the specimens are from the hills near the Arracan frontier, but I have written to ask; they are nothing I believe but limestone. He likewise presents the Society with a medical work of great repute in Burmah and Siam.

He wishes me to send him some books, and asks particularly for a work on Chemistry, one on Hindoo Astronomy, one on Comets and one on Electricity. He can read English with the assistance of a dictionary. Would you kindly allow me to take the liberty of asking you to get Mr. Piddington to fill up the blanks in the enclosed note, and send it to Messrs. Ostell and Co. Mr. Piddington will know better than I do what elementary works on the subjects I have mentioned, would be most useful to the prince.

Moulmein, 3rd August, 1844.

The models, which are of coarse earthenware and of an ovoid form about six inches by four, are simply figures of Budh (Guatama,) surrounded by his usual attributes, but with a *Deva Nagree* inscription below the figure! which is probably what has excited, and very naturally, the curiosity of the Prince.*

The Secretary was instructed to meet the Prince's wishes in every way in his power.

N.B. A paper has intermediately been published upon the silver coin above noted by Lient. Latter.

The Sub-Secretary stated, that he had forwarded to Captain Macleod, the following works; viz.

* In the Society's collection we have the converse to this. A figure of Krishna, about three feet high, carved in common sandstone, but in good preservation, with medal of Buddh, (Guatama,) on his forehead like a lady's ferroniere!—Eds.

Thomson on Heat and Electricity ; O'Shaughnessy's Manual of Chemistry ; O'Shaughnessy's Manual of Electricity ; but that he could not find any work treating specially of Comets ; and that with respect to a work on Hindu Astronomy, it was not stated if it was a European work on that subject or a Native one which was desired, and that he should communicate with Captain Macleod on the subject. The specimens had not yet been examined. He subsequently learned, that Messrs. Ostell and Co. had forwarded Bentley's Hindu Astronomy.

Read the following note from Captain Bigge, Assistant Commissioner in Assam, accompanying the presentation to which it refers :—

Tin Coins from Pahang on E. coast of Malay Peninsula, North from Singapore ; 16 go to the dollar ; and these were received from a fisherman off the mouth of the river, in change on a purchase of fish. To coin similar monies is severely punished by mutilation and death. The smaller coin is the Dutch doit from Batavia. J. B.

Read the following reports from the Librarian :—

To H. TORRENS, Esq., *Secretary Asiatic Society.*

SIR,—I have the honour, by your direction, to report respecting the communication on the part of our Society with the Royal Irish Academy. The Royal Irish Academy, as appears from our MSS. Proceedings, is one of those eight Institutions, (viz. the Royal Society of London, the Royal Society of Edinburgh, Royal Irish Academy, Society of Antiquarians of London, Society of Antiquarians of Edinburgh, the Linnæan Society, American Philosophical Society, American Academy of Arts and Sciences) with which the Asiatic Society, March 1800, first opened an intercourse by sending them their Researches, and regularly transmitting them, whenever a new volume of the Researches was published. The Royal Irish Academy presented on their part, March 1806, a set of their Transactions, which presentation was, however, not repeated until 1837, from which time they regularly sent their periodical publications to the Society ; viz. its Transactions from vol. 17 to 19, pt. 2d, (Vide Journal Asiatic Society, Oct. 1837, Nov. 1839 and 1841, No. 116,) while I do not find in our Proceedings that the Society since 1837 has, by way of return, forwarded any of its publications to the Royal Irish Academy.

I avail myself of this opportunity to forward you a list of the learned institutions which have been in communication with our Society, by sending it their publications, so far as I have been able to ascertain this from our Proceedings.

I have the honour to be, Sir,

2d October, 1844.

Your most obedient servant,

E. ROSE.

List of the Institutions in communication with the Asiatic Society of Bengal, from its foundation up to the present date.

A. ENGLISH SOCIETIES.

1. Linnean Society of England, from 1800—1841.
2. Geological Society of England, from 1812 to the present date.
3. Society for the Encouragement of Arts, from 1808 to the present time.
4. Astronomical Society of London, from 1822 to the present time, (regular.)
5. Cambridge Philosophical Society, 1816, (not continued.)
6. Royal Asiatic Society, 1828.
7. Horticultural Society of England, since 1822, (not regular.)
8. Royal Society of London, from 1800—1838, (regular, as it appears.)
9. Antiquarian Society of London, from 1800 to the present date, (regular.)
10. Royal Society of Antiquarians of Edinburgh, from 1800.
11. Agricultural Society of England, 1828.
12. Zoological Society of London, from 1833—1843, (not regular.)
13. Athenæum of Liverpool, 1834, (not continued.)
14. Society of Plymouth, 1828, (not continued.)
15. Statistical Society of London, 1838.
16. Royal Geographical Society, from 1839 to the present time, (regular.)
17. London Electrical Society, from 1842 to the present date, (regular.)
18. British Association for the advancement of Science, 1842.
19. Edinburgh Royal Society, from 1800—1834, (not regular.)
20. Royal Irish Academy, from 1800 to the present date, (regular from 1837.)
21. Agricultural Society of Calcutta, 1828, (irregular.)
22. Medical and Physical Society of Calcutta, 1822.
23. Bombay Royal Asiatic Branch Society.
24. Bombay Geographical Society.
25. Madras Literary Society, 1806.

B. OTHER EUROPEAN SOCIETIES.

26. Société de Caen, 1816, (not regular.)
27. Royal Academy of Caen, 1836, (not continued.)
28. Société Asiatique de Paris, from 1822 to the present date, (regular.)
29. Geographical Society of Paris, from 1825 to the present date, (regular.)
30. Société Royale de Bordeaux, 1828, (not continued.)
31. Royal Academy of Bordeaux, from 1833 to the present date, (regular.)
32. Académie Royale de Marseille, 1835 (not continued.)
33. Société Industrielle de Mulhausen, 1838, (irregular.)
34. Société de Physique et D'Histoire Naturelle de Genève, from 1833 to the present date, (regular.)
35. Société Helvétique des Sciences Naturelles, 1839, (not continued.)
36. Royal Society of Copenhagen, 1816, (not continued.)
37. Société Royale des Antiquaires du Nord, 1836.
38. Batavian Society, from 1828—1833.
39. Amsterdam Royal Institute, 1838, (not continued.)
40. Hungarian Society, 1836, (not continued.)
41. Royal Academy of Munich.

C. AMERICAN SOCIETIES.

42. American Academy of Arts and Sciences, from 1785 (when presenting their memoirs.)
43. Philosophical Society of Philadelphia, from 1680 to the present date.
44. Academy of Natural Science at Philadelphia.
45. Lyceum of Natural Science of New York, 1822—1832.
46. National Institution for Promotion of Science, at Washington, 1843.

. To H. TORRENS, Esq. *Secretary of the Asiatic Society.*

SIR,—I beg to submit a list of the incomplete and defective works of our Library, as a Supplement to that of the periodicals, which, on a previous occasion, I had the honour to lay before the Society.

To facilitate the use of this list, I have made several divisions. The letter A contains the works, which have not yet been completed by their authors; B those, of which the contents are unconnected with the immediate objects of the Society, and to complete which is not of urgent necessity; while under C are classed the books of reference, and those which bear upon the Researches of the Society. Lastly, D, includes the works which have been presented to the Society, and the subsequent volumes of which may be expected to be forwarded to the Library, as soon as published. Those which are marked by an asterisk, have already been mentioned in our Proceedings for July 1843.

Should the Society decide on an ultimate completion of these works, I would beg to suggest, firstly, that the books comprehended under C, should be completed, and that the Librarian should be authorized to procure them in Calcutta, before the present report is printed, as the prices of the books, if known to be wanted by the Society, would in consequence be raised.

I have the honour to be, Sir,

Asiatic Society's Rooms,

Your most obedient servant,

2nd October, 1844.

E. ROSS.

List of the defective and incomplete Works, in the Library of the Asiatic Society.

A.

126. Works of Confucius, by J. Marshman, Serampore, 1809, vol. 1st.
139. Beke's Origines Biblicæ, London, 1834, 8vo. vol. 1st.
313. Arnott's Physics, London, 1825, (2 vols.) vol. 1st and 1st part of the 2d.
534. Illustrations of Indian Botany, etc. of the Himalayan Mountains, by J. F. Royle, vol. 1st.

B.

English.

357. Astronomical Observations at Greenwich in 1816, by J. Pond, 1818, part of the 2d vol.
391. American Almanac for 1836, 1838, and 1839, vols. 7, 9, 10.
637. Luxmore on Strictures, Calcutta, 1814, No. 1.
662. Lectures on Comparative Anatomy, by B. Grant, published in the "Lancet" for 1833-34, vol. 1st.
678. Nautical and Hydraulical Experiments, by M. Beaufoy, London 1834, vol. 1st.
730. The Farmer's Cabinet, Philadelphia, 1840, vol. 4th.

French.

352. *Histoire Céleste Française*, par J. de la Lande, Paris, 1801, tome 1er.
 362. *Connaissance des temps à l'usage des Astronomes*, Paris, 1760-1820, (the vols. for the years 1795 and 1804 wanting.)
 1152. (Heber's) *Voyage à Calcutta*, Traduit d'Anglais, vol. 2d.

Latin.

1593. *De Rebus Britannicis Collectanea*, Auct. F. Lelando, vol. 2d and 3d wanting.

C.

English.

- 190a. *Elements of Hindoo Law*, by T. Strange, vol. 1st.
 193. *Digest of Mahummedan Law*, by J. Bailie, Calcutta, 1805, fol. (4 vols.) vol. 1st.
 424. *Outlines of the Geology of England and Wales*, by W. D. Conybeare, London, 1821, part 1st.
 529. *Icones Plantarum Indicæ Orientalis*, by R. Wight, Madras, 1838-39, 2 vols. (of vol. 1st Nos. 7 and 8 wanting.)
 536. *Zoological Journal*, London, 1835-36, 2 vols. (complete two vol. and published at 144.)
 535. *Description of Malayan Plants*, by W. Jack, Appendix No. 3.
 543. *Zoological Researches*, by T. Thompson, No. 1 and 4.
 547. *Animal Kingdom of Cuvier*, with specific descriptions by E. Griffith, etc. vol. 10 wanting.
 549. *Illustrations of Indian Zoology*, by J. E. Gray, vol. 1st and of vol. 2d parts 11, 12, 15, 20.
 553. *Description and Figures of 200 Fishes of the Coromandel Coast*, by P. Russell, London, 1803, vol. 1st, (complete in two vols.) published at 8l. 8s.
 663. *The Cyclopaedia of Anatomy and Physiology*, London, 1836, 2 vols. (complete in 4 vols.)
 807. *Reports on the State of Education in Bengal*, by W. Adam, 3d Report.
 836. *Memoir of the Hister. Society of Pennsylvania*, 1834, vol. 3d.
 879. *State Papers by the Earl of Charendon*, Oxford, 1767-1786, 3 vols. (vol. 2d wanting.)
 1024. *History of the Indian Archipelago*, by J. Crawford, 3 vols. (vol. 1st wanting, 2l. 12s.)
 1535. *Archæologia*, vol. 17th wanting.
 1545. *Antiquities of Herculaneum*, translated from the Italian, by T. Martyn and J. Lattie, vol. 1st, part 1st, London, 1773.
 1681. *Grammar of the Arabic Language*, by M. Lumsden, Calcutta, 1805, fol. vol. 1st.
 1843. *Dictionary of the Malay Tongue, as spoken in the Peninsula of Malacca*, by J. Horviser, London, 1801, part 1st.
 1846. *Dictionary of the Chinese Language*, by R. Morrison, Macao, 1815, vol. 1st, part 1st, and vol. 2d part 2d.
 N. B.—This work is published in 7 vols. from 1815-1821. The original price of which is 11l. 5s. but it may now be obtained at 8l. 10s.

French.

581. Histoire Naturelle des Poissons, par M. de Cuvier, (1st vol. of plates wanting.)

1171. Voyage du Levant ou 1692, par M. Robert, (incomplete.)

1300. Voyage aux Régions Equinoctiales du Nouveau Continent, par A. de Humboldt, (Atlas wanting.)

1536. Géographie, par E. Mentelle et Maltebrun, (vols. 1st, 3d, 4th, 7th and 9th wanting.)

2086. Notices et Extracts des Manuscrits de la Bibliothèque Imperiale et autres Bibliothèques, Paris, 1787—1813, (10 vols.) vol. 10th wanting.

Latin.

848. *Memoriae Populorum*, etc. auct. F. G. Stritter, Petropoli, 1774—1779 (vol. 2d wanting.)

897. *Monumenta Germaniae Historica*, Ed. G. H. Pertz, Hanoveræ, 1826, fol. vol. 1st.

1554. *Aegyptiaca*, by White, Oxford, 1801, part 1st.

1915. *Lexicon Biographicum et Encyclopædicum à Mustafa Ben Abdalla comp.* Ed. A. Lat. Vert. G. Flügel, Leipzig, 1837, 4to. tom. ii.

*D.**English.*

358. *Astronomical Observations at the Madras Observatory*, by J. Goldingham, 1824—1827, vols. 3—5.

1421. *India*, by Rickard, 2 vols. (of vol. 1st p. 2d, and of vol. 2d pt. 1st and 2d wanting.)

368. *Mécanique Céleste* of De la Place, translated by N. Bowditch, Boston, 1829—1839, vol. 1st and 2d.

French.

* 445. *Récherches sur les Poissons Fossiles*, par L. Agassiz, Neuchatel, (12 livraisons,) 4, 5, 7th livraisons wanting.

* 387. *Histoire Naturelle des Poissons de l'eau douce*, par L. Agassiz, Neuchatel, fol. 1er livraison.

* 1256. *Jacquemont's Voyage dans L'Inde*, (incomplete.)

N. B.—See As. S. 1836, March and Dec. where M. Guizot, on the part of the French Government, offers to the Society those numbers of this work, which had then appeared.

* *Vendidad Sade*, par E. Burnouf, 11 livraisons.

* 1495. *Déscription de l'Egypt, ou Recueil des Observations et Recherches. Antiquites, Déscription*, tome 1er.

Ditto ditto *Antiquites, Mémoires*, tome 1er.

Ditto ditto *Planches à ditto ditto* tome 1er.

Ditto ditto *Etat Moderne*, tome 1er et 2d.

Ditto ditto *Planches à ditto ditto*

Ditto ditto *Histoire Naturelle, Planches*, tomes 1er et 2d.

Ditto ditto *Préface Historique et Avertissement*, tome 1er.

1976. *Harriwansa*, traduit by A. Langlois, 1 and 3 livraisons.

German.

948. *Gemäldeaal der Lebensbeschreibungen grosser Moslemischer Herrscher etc.* v. J. v. Hammer, Leipzig, 1837—1838,, vols. 4th and 5th.

943. Geschichte des Ormanischen Reichs v. J. v. Hammer, Pesth, 1827—1838, vol. 3d wanting.

REPORT OF THE CURATOR MUSEUM OF ECONOMIC GEOLOGY, AND MINERALOGICAL AND GEOLOGICAL DEPARTMENTS, FOR THE MONTH OF SEPTEMBER.

My report for this month will be brief, for I have been still much engaged in Laboratory arrangements, which occupy more time than I anticipated.

Mineralogical and Geological.—Learning from the Introduction to Dr. Cantor's Chusan Report, that he had brought some Geological specimens with him, I deemed it my duty to make some enquiry for the collection. I learn, that it has been forwarded by the Government to the Honorable the Court of Directors. I should suggest, however, that if there be any duplicates, or the specimens admit of division, we might perhaps on application be favoured with a part of the collection; and nothing from a country so utterly unknown as China, can be without interest.

Dr. Rowe of the Artillery at Dum-Dum, sometime ago, forwarded me the four small specimens now on the table: of these two are of much interest; No. 4 is a true corundum, and No. 2 also is that variety of this little known stone which approaches to the emery of Naxos. Both these are new as Bengal minerals though found in Southern India, and I have written to Dr. Rowe for as exact an account of his locality as he can give me, for the purpose of requesting any one in the neighbourhood, and especially our active associate, Lieut. Sherwill, to investigate this spot carefully if he can visit it. A true emery corundum might be a valuable discovery if within moderate reach of carriage.

I now read Dr. Rowe's letter:—

MY DEAR SIR,—I shall feel extremely obliged, if you will at your leisure examine the accompanying specimens, and name them for me.

No. 1.—In indenting on the Commissariat Department for a medicine called "Toorbut," a Native substitute for Jalap,* the Commissariat Agent at this station bought a quantity of the accompanying, which I of course detected not to be a root, but a fossil, which on inquiry I find a Bunneea at the bazar here had obtained to cure Rheumatism, in the Burra-bazar at Calcutta. This is all the information I can obtain of it. I should much like to know what it is, and it has occurred to me, that you might be able to enlighten me. Its locality of course we cannot learn. While sending these articles, I have taken the liberty of sending three other small specimens of rocks, picked up by myself in marching down from Benares viâ the Old Hazareebaugh and Bancoora route. May I ask the favor of your naming them also for me.

Dum-Dum, 8th August, 1844.

J. ROWE, Surgeon, Artillery.

Upon examining this curious fossil, the first impression, looking at the stalk, is that it must be a fruit, but I am inclined to think (and Dr. Wallich is so with me,) that it is not so, but that it is a petrified Zoophyte. The regular lines upon it much resemble those of some species of Cyathophyllum and Caryophyllum, and the articulation of the stem which I have been fortunate enough to obtain with some specimens, reminds us of that of some encrinites. Upon enquiry in the bazar, I find they are plentiful there; that they are brought by the Arab ships from Arabia, and called Huzoor el-é'hood.†

* The root of the Convolvulus Turpethum.

† More probably Huzor-al Loheld, i. e. Lohelda stones? Hence, brought from Lohelda?

They are sold as medicine, at 6 rupees per seer. It will be seen that amongst those I have obtained, some have parts of the matrix adhering to them, others have buds or gemmules, like the corallines, at their base; one has perhaps an incipient ramification like *Cyathophyllum*; another traces of a serpula adhering to it, and another the trace of a small oyster or other shell-fish; internally no trace of organisation is seen. Upon dissecting one of these in dilute muriatic acid, I find that it almost entirely dissolves, the solution being pure carbonate of lime with traces of iron, as usual in the grey coloured marbles. A small yellow, green residuum, in light flakey grains remains at the bottom of the glass, and when this was examined by the usual tests, it was found to be iron with trace of sulphur. Nothing of animal or vegetable matter, nor any siliceous spines as in the *Echinidæ* are traceable. We may I think call this fossil, (provisionally) *Lokeidolite*, which does not pronounce upon its nature.

Museum of Economic Geology.

The following letter from the Secretary to the Government of the North Western Provinces, has been communicated to us by Government, with reference to our application for a search for Lithographic Stones.

No. 2166.

From the Under-Secretary to the Government of Bengal, to the Vice President and Secretary to the Asiatic Society, dated Fort William, 27th August, 1844.

SIR,—I am directed by the Honorable the Deputy Governor of Bengal, to transmit copy of a letter from the Secretary to the Government of the North Western Provinces, No. 733, dated the 12th instant, with its enclosures, and to request, that on the receipt of the Lithographic Stones, therein referred to, a report as to their quality may be forwarded to this office, for transmission to the Lieut. Governor of the N. W. Provinces.

I have the honor to be, Sir,

Your most obedient servant,

A. TURNBULL,

Under-Secretary to the Government of Bengal.

No. 733.

From J. THORNTON, Esq. Secy. to the Govt. N. W. P. Agra, to A. TURNBULL, Esq. Under-Secy. to the Govt. of Bengal, dated Agra, the 12th August, 1844.

Genl. Dept. N. W. P.

SIR,—I am directed to transmit to you, for submission to the Hon'ble the Deputy Governor of Bengal, the accompanying copy of a further correspondence with Captain Stewart, Fort Adjutant of Chunar, regarding Lithographic Stones, and to beg that His Honor may be favored with a report on the quality of the stones which have been sent down by that Officer to the Asiatic Society in Calcutta.

I have, &c.

Agra, the 12th August, 1844.

(Signed) J. THORNTON,
Secy. to the Govt. N. W. P.

(Copy.)

From Capt. W. M. STEWART, Fort Adjutant, Chunar, to J. THORNTON, Esq. Secy. to the Govt. N. W. P. Agra, dated 27th July, 1844.

SIR,—In continuation of my letter of 20th May last, regarding the search for Lithographic Stones, I have the honor to acquaint you for the information of the Honorable the Lieutenant Governor North West Provinces, that I sent out a party to the site from whence they had been obtained before, with the view of ascertaining whether or not they may be obtained of better quality, by quarrying deeper into the stratum of white lias, instead of from the surface.

A perpendicular cut 12 feet deep has been made in two places, and four specimens of stone of different qualities have been selected and forwarded to the Secretary of the Asiatic Society, for the purpose of being tested at the Government Lithographic Press.

They are decidedly of a firmer texture and finer quality than the surface specimen sent to the Press of the Sudder Board at Allahabad ; but they are still much inferior to German stone, some specimens of which were forwarded for my inspection.

It is therefore expedient to continue the search at the locality indicated by Captain Shortreede, and as the stones forwarded by him have been found to answer for Lithographic purposes, I have no doubt of ultimate success.

With the permission of the Honorable the Lieut. Governor, I should wish to avail myself of the services of Mr. C. H. Burke, late of the Revenue Survey Department, and now residing here as a pensioner; a small travelling allowance of (say) 100 Rs. per month for two months, would be sufficient for all his wants, and fully attain the object desired. I propose detaching him, provided the permission of the Lieut. the Governor is accorded, early in October.

I have the honor to forward for counter-signature, a contingent bill in duplicate for expences incurred in the late operations.

I have, &c.

Chunar, the 27th July 1844.

(Signed) W. M. STEWART, Captain,
Fort Adjutant, Chunar.

(Copy.)

No. 731.

From J. THORNTON, Esq., Secretary to the Government North Western Provinces, Agra, to Captain W. M. STEWART, Fort Adjutant, Chunar, dated Agra, the 12th August, 1844.

General Department N. W. P.

SIR,—I am directed to acknowledge the receipt of your letter of the 27th ultimo, regarding the specimens of Lithographic Stones dispatched to the Asiatic Society in Calcutta, for the purpose of being tested at the Government Lithographic Press.

2. In reply I am desirous to convey to you His Honor's thanks, for the exertions you are making as regards the desired investigation.

3. His Honor is pleased to authorize you to pay Mr. Burke, the individual you propose to employ in the search for Lithographic Stones, a sum not exceeding 200 rupees for the trip which he will make on this duty, at such times and in such amounts as you may think best; but this sum is not to be considered a monthly allowance, which is always likely to cause unnecessary protraction of an enquiry.

4. The Lieutenant Governor has been pleased to pass the bill submitted by you for the expense already incurred in quarrying for stones, amounting to Rupees 128 : 10; the bill in question has been sent to the Civil Auditor, who will return it to you duly audited, and the Accountant N. W. P. will be requested to instruct the Collector of Mirzapore to pay the amount to your order.

I have, &c.

Agra, the 12th August, 1844.

(Signed) J. THORNTON,

Secretary to the Government N. W. P.

The report on the Stones sent down has not yet been received.

Ordered—That the reports be printed, that the Secretary be requested to renew the Society's correspondence with the Royal Irish Academy, and that the deficient works be completed as soon as practicable.

For all the foregoing presentations and communications the best thanks of the Society were voted.

Proceedings of the Asiatic Society for the month of NOVEMBER, 1844.

The stated monthly meeting was held on Wednesday evening, the 6th November.

Charles Huffnagle, Esq. the senior member of the Committee of Papers, present, in the chair.

It was stated to the meeting by the Secretary that, as arranged at the last meeting, a deputation from the Society had waited on the Honourable the Governor General to announce to him his election as President.

The deputation consisted of the Honourable Sir John Grant and Sir Henry Seton, Vice-Presidents, the members of the Committee of Papers, the Secretary, and a number of members of the Society. Sir John Grant, Vice-President, informed the R. H. the Governor General of his election, observing, that the honorable post of our President had been filled by certain of his predecessors in the Viceroyalty of India, and that the Society feel assured that it would be grateful to a public man so deeply interested as was our present Governor General in the prosperity of this country, to find himself in a position to foster and superintend the proceedings of a Society, the object of which had long been the elucidation of its resources, and the better knowledge of its history, natural productions, literature, and antiquities.

The R. H. the Governor General replied: That he received the intimation of his election with feelings of gratification; that the Society was not mistaken in concluding that he was warmly interested in its proceedings, and that he accepted, with the expression of his thanks, the office of its President. He added, that the great press of business which his public duties necessarily induced, must he feared deprive him of the power of attending to his presidential functions with that degree of attention which he would otherwise have desired to give to them; but that in so far as was possible to him, he would personally superintend the labours of the Society,

and at all times and occasions do his utmost to further their progress, and to enhance the welfare and prosperity of so long established and so highly respected an institution.

The following gentlemen proposed at the last meeting, were ballotted for and declared duly elected :—

T. R. Davidson, Esq. C. S.

Capt. Marshall, B. N. I.

Allan Gilmore, Esq.

J. Borrodaile, Esq.

J. P. Mackilligin, Esq.

And the following new members were proposed ;—

J. Alexander, Esq. C. S. proposed by C. B. Trevor, Esq. C. S. and seconded by the Secretary.

J. Furlong, Esq. proposed by the Secretary, seconded by Robert W. Frith, Esq.

The following list of books presented and purchased was read :—

Books received for the meeting of the Asiatic Society on the 6th November, 1844.

Books presented and exchanged.

1. Meteorological Register for the month of September. From the Surveyor General's Office.

2. Oriental Christian Spectator, Vol. V. No. 10. October, 1844. Bombay.—By the Editor.

3. Calcutta Christian Observer, Vol. XIII. Nos. 149-50. October and November, 1844. By the Editor.

4. Calcutta Journal of Natural History, etc., By J. M'Clelland and W. Griffith, No. 18. By the Editors.

5. London, Edinburgh and Dublin Philosophical Magazine, Nos. 159-161, for April to June, 1844. By the Editors.

6. Edinburgh New Philosophical Journal, by Jameson, No. 72. April, 1844. By the Editor.

7. Proceedings of the Royal Irish Academy for the year, 1842-43. Part 7. Dublin, 1844. By the R. I. A.

8. Report of the 13th Meeting of the British Association for the Advancement of Science, 1843. By the Association.

9. The Athenæum, Nos. 875-879, per August 1844.

Books Purchased.

10. Journal Asiatique, Nos. 10-12.

11. Histoire Naturelle des Poissons, par M. de Cuvier et M. A. Valenciennes; tome xvii. 55. Paris. 1844.

12. D. D. Planches, Nos. 471-496.
13. Journal des Savans, January to May 1844.
14. History of Rome, by B. C. Niebuhr, edited by L. Smitz, London 1844. Vols. 3 and 4.

Read the following letter from Government :—

No. 684 of 1844.

From the Secretary to the Government of India, to H. TORRENS, Esq., Vice-President and Secretary to the Asiatic Society, dated Fort William, the 10th October 1844.

Foreign Department—*Secret.*

SIR.—I am directed by the Governor General in Council to transmit, for such notice as the Society may deem them to merit, the accompanying “Notes on the Commerce, Revenue and Military resources of the Punjaub, taken in 1837,” and furnished to Government by Major R. Leech, C.B.

2. You will be pleased to return the original Report when the Society has no further occasion for it.

I have the honor to be, Sir,

Your most obedient servant,

Fort William, the 10th October, 1844.

J. CURRIE,

Secy. to the Govt. of India.

The MSS. being a foolscap sized volume of some thickness, containing much interesting statistical matter, it was, after some conversation, proposed by the President, and seconded by Dr. Mouat, that the book be circulated to the Members of the Committee of Papers for suggestions as to selecting portions for publication.

Read the following letter from Government :—

No. 2640 of 1844.

From J. CURRIE, Esq. Secretary to the Government of India, to the Secretary Asiatic Society, dated Fort William, 19th October, 1844.

Foreign Department.

SIR,—I have the honor to transmit, for such notice as the Society may think them to deserve, the accompanying copy of a report by Captain Brodie of his Tour in the Western Naga Hills, and also copy of one by Mr. Masters on the Botany of those hills.

I have the honor to be, Sir,

Your most obedient servant,

J. CURRIE,

Fort William, the 19th October, 1844.

Secretary to Govt. of India.

Resolved—That the papers be circulated to the Committee of Papers.

Read a letter from Lieut. J. Latter, B. N. I. addressed to the Secretary, on the subject of the Bhuddist Coin sent round by Captain MacLeod, from Moulmein, which was referred to the Editors for publication in the Journal.

Read extracts of letters from Major T. B. Jervis, Regent's Park, accompanying some new and very beautiful specimens of Lithography and Glyphography, as follows :—

I enclose in this packet a specimen of my Lithographic press, "Argemone Mexicana," copied out of Wight's Flora, a most splendid specimen of art, and am in treaty to do all the plates for the London Royal Asiatic Society. I have spoken to Wilson, with whom I am on intimate terms, to arrange with your Society for the plates of the Asiatic Journal and Society, and any embellishments you may require, which I will execute at my Amateur press rather cheaper and quicker than you can get them done in Calcutta or England. If you approve of them, I shall be obliged by your giving these specimens as much publicity as possible, and shall be glad if I can do any thing to forward the cause of science in India. If you would communicate with my brother, Col. Geo. Jervis, chief Engineer in Bombay, I have no doubt you would get contributions from that quarter, and he would tell you exactly the cost of all that I have sent out to him, and to yourself. More beautiful lithography than that of the flower, you have never seen, and the probability is that an immense accession of information would flow in from all quarters, if only parties could get their illustrations accurately and cheaply lithographed.

I should be happy if you would refer to my brother for some most curious and valuable specimens forwarded to him of the application of Lithography to cheques, passes, receipts, &c. applicable to the Salt, Opium, and other such departments.—Papers and documents so prepared, would never be imitated, or admit of erasures without detection.

I ask your kind excuse for this brief and plain address, and should be most happy, if I could in any way express the obligation under which you have laid us.

Yours very truly,

(Signed) F. B. JERVIS.

Observations of the Comparative use and merit of the various kinds of Artistical Illustration, by Major T. B. JERVIS, F.R.S.

THE art of *Printing* has materially contributed, in the designs of Providence, to the civilization of the world, and to the promotion of the gospel; in fulfilment of which objects we hail every improvement in this so simple and ready means of communicating our thoughts and experience to others :—yet how much, that is instructive and valuable, escapes the power of the pen! how many lovely tints, how many undefa-

able forms, and arrangements, defy description ! the disposition of the fleecy cloud, the rich array of floral hues and symmetry, do but mock our imperfect conceptions of nature. Failing to give endurance to them by any descriptive process,—the art of *Printing* is confessedly incomplete ; yet, the artist's skill is limited, and can only be imparted through the medium of other contrivances. *Engraving*, as a means of communicating and multiplying such artistical skill, is justly appreciated as a necessary adjunct to *Printing*, and has now been brought to a high state of perfection in England.

The impulse which has been given to every discovery, in the progress of events, for the last fifty years, and the long interval of peace, have operated mightily on all those branches which are in any way connected with chemistry, and our artists have not been slow to perceive that the strictest adherence to the symmetry of nature, to fact, to beauty, and to taste, are as intimately connected with the arts of design as a regard to the niceties of manipulation to practical success.

The earliest and rudest process of *Wood-cutting* was admitted to possess a high degree of usefulness—how short it falls of the art as now practised ! and yet, perhaps, those very rude specimens were often as costly, in bygone days, as some of the woodcuts introduced, by way of embellishment, into many elaborate publications of the present time : the woodcuts, for instance, in London's works on gardening and agriculture. How exquisitely beautiful, also, are many of the little woodcuts in children's books, those of the Tract Society, for example, on special objects of Natural history. Do not such lend a fascination to the inculcation of right principles, and smooth the old rough paths of education ; the eye of the teacher, or the parent, rests sweetly on them ; yet far more delightfully the eye of the little ones—and the object is nobly and simply gained. At a single glance, without an effort, what would be otherwise inadequately attempted, and imperfectly employed, is pictorially communicated with every advantage.

The art of *Copper-plate engraving* was chiefly promoted as a substitute for woodcuts, by the eminent artists of the Italian school, who condescended to throw all the weight of their lofty mind and talent into the scale, and thus conferred on this art a character, which to this day, it has not yet acquired in Britain. Where, indeed, do we see persons thus occupied, though remarkable for their proficiency in design, admitted to a place in society, as persons entitled by taste, and their proper art, to the same consideration as the painter and the poet ? We have been too much accustomed, hitherto, to treat this as a purely mechanical business.

Engraving on steel, as a further step to the multiplication of illustrations, has its advantages and disadvantages. A copper-plate engraving is subject to wear out, after a comparatively limited number of impressions. After some two or three thousand, the best engraving on copper is sensibly deteriorated : then, on the other hand, it can be retouched, alterations may be introduced, and these with greater ease and less expense than is supposed. But the steel engraving cannot be altered ; nevertheless, it is sharper, cleaner, and more durable ; and will admit, with proper care, of an indefinite number of impressions. For maps, copper-plate engraving is unquestionably to be preferred to steel engraving. For line engraving, perhaps on the whole, steel is to be preferred.

Then there are *Messotint*, *Aquatint*, and various other similar processes fitted principally for historical subjects, or portraits, of which it is sufficient to say, they

have all their respective merits when restricted to their respective proper objects; and then only, when committed to competent artists. A bad engraving reflects, now-a-days not so much discredit on the artist, as the party who employs him; because the highest degree of excellence, and finish, and taste, can now be attained with sufficient,—nay, we speak truly,—a very moderate remuneration for time. If such folks will have cheap work, they may overreach themselves, and for a while impose upon the public, while they, in fact, keep back the true interests of their country, and of knowledge; but let them be well advised, that we are all on the advance, and other modes will supersede these expedients, and place the meritorious talent of the engraver beyond their sordid reach.

It would seem, in adverting to the period when *Printing* and other kindred inventions were brought to light, that the Allwise Disposer had then his great design of the more extensive communication of the Gospel principally in view. At least we love to consider every event as so happily falling out, and concurring to His praise in the exercise of His sovereign love. It was at the commencement of a late and glorious revolution in the arts and sciences, when the mighty power of steam was summoned to co-operate with human industry and intelligence, that *Lithography* came also in aid of those oriental languages which do not admit of their being so readily, or correctly, expressed in moveable metal type. Look, for instance, at the Chinese, the Persian, Arabic, Mandchù, and various characters of India and the Eastern Archipelago: these, without one exception, could never be so elegantly or exactly printed by moveable metal types; and have, in every such attempt, a certain formality and rudeness, comparable only by the relative elegance of a very fine woodcut from the hands of a modern artist, and one of the coarse woodcuts of the earliest school: but besides these, there are a great variety of subjects where softness, beauty, and, more than all, where economy is specially desirable, to which *Lithography* is particularly adapted. It yet remains to be seen how much more extensively this elegant and purely chemical process, as it may be called, can yet be brought; and in the performance of this, we do not hesitate to affirm also, that there is no reasonable limit to the true representation of the most exquisite and complicated works of nature and art. For maps of a superior kind, there can be no question that lithography is peculiarly fitted. Good impressions may be taken, with proper care, to the extent of some two thousand; and an unlimited number of impressions at second-hand, by transfers from the original, or from copper-plate engravings.

For a very great variety of illustrations, botanical drawings, and landscapes, *Lithography* possesses greater facilities and recommendations, in all cases where the number required is not great, than copper-plate engraving, woodcuts, or another remarkable art, of which we are about to speak—*Glyphography*; that is, *cæteris paribus*, the cost, number of impressions, and excellence of execution, all taken into account, *Lithography* is best suited, when the number of impressions does not exceed five hundred, or one thousand; and the chalk lithographic drawings are evidently in all cases more true to nature than aquatint, or stippled engraving on copper or steel.

But the crowning process is *GLYPHOGRAPHY*, an art for which we are indebted to the ingenuity of Mr. Edward Palmer, whose attention had been early directed to other methods of multiplying engravings by the Electrotpe process. Here is a simple, efficacious, and universal method of perpetuating recollections, facts, and ideas; possessing at the same time some peculiar recommendations to public notice; in its

comparative cheapness, the readiness with which it can be carried on, the high degree of perfection to which it may be brought, in the hands of competent persons; its general applicability; lastly, and principally, that it is an art which requires very little study or instruction.

With these prefatory remarks we invite attention to the specimens now submitted, and to the volume published by Mr. Palmer, price 4rs., trusting that these will find many admirers in India and China; and this valuable art meet with every encouragement from the Government, and the community, European and Native. Further information may be had on application to Major T. B. Jervis, who is appointed sole agent for Mr. Edward Palmer, for India and China. A small volume, descriptive of Glyphography, is now before the public—and with these particulars they have likewise an opportunity of estimating with tolerable exactness the cost of any other work by the expense of such specimens: as of those also in Lithography and Engraving, by similar illustrations of various kinds.

Referred to the Committee of Papers for communication with Major Jervis.

Read the following extract from a letter addressed to the Sub-Secretary by Lieut. Baird Smith, B. E. Delhi Canal Department.

I have had an interesting discovery lately in a second submerged town or village, about two miles below Behut, in the bed of the Muskurra river, one of the mountain torrents that drain the tract of country at the base of the lower Himalayan range. I have got a number of coins, household utensils, mill stones, silver bangles, and many other things from the spot. These articles were found about 6 feet beneath the surface of the ground, and were exposed in consequence of the Muskurra changing its course, and cutting away its bed and banks to a considerable depth. I am told that a large quantity of jewellery and much silver coin were discovered by people who now conceal them. I intend to extend the excavations, and to take measures for securing what may then be discovered. The coins I have obtained are of silver and copper, in excellent preservation and of Mahomedan types. Those found at Behut, were generally of pure Hindoo character, and this latter place has evidently been buried at a much earlier date than the one now discovered. I have no doubt that farther examination of the locality will lead to results of interest. If so, I may put them in form, and send them to you.

21st August, 1844.

BAIRD SMITH.

The Secretary was authorised to address Lieut. Smith, to know what the extent of work in the buried village might be, and as to the probable cost of the whole, with a view to the Society's taking a share in what might be found.

Read extract of a letter from E. H. Lushington, Esq. C. S. addressed to the Secretary.

I send you a stone on which are cut some Arabic letters, but which neither I or any one in the neighbourhood can decypher.

Should you discover that the stone contains matter of no greater import than the one discovered by Mr. Pickwick, you must forgive me on the score of ignorance.

Should however, the contrary be the case, I shall have much pleasure in sending the Society by the first opportunity some more slabs, &c. which were shewn me buried in the earth near a village, about 12 miles hence. The village is full of old temples, &c. and I shot a snake near one of them, upwards of 17 feet long, but I regret that its skin was so much injured as not to be worth the keeping.

Jessore, Monday 30th.

EDWARD H. LUSHINGTON.

The inscription consists of excerpts from the third chapter of the Koran, called the *Imran*, selected, as the Secretary observed, with special reference to the character of the majority of the early frequenters of the mosque in which it must have been placed, who as new converts to Islamism, are exhorted by texts declaratory of the corrupting influence of idol worship, declarations of the Majesty and power of the one God, and denunciations against unbelievers, to avoid relapsing into religious error. A copy was ordered to be sent to Mr. Lushington, with the best thanks of the Society.

Read the following letter from Dr. McGowan, of the Ningpho Hospital, with a translation of the impression taken from one of the compartments of the great bell presented to the Bishop of Calcutta by Captain Warden, see *Journal Asiatic Society, Proceedings for May 1844.*

The Secretary remarked upon the curious evidence given in the lists of titles, offices, and distinctions thus perpetuated in metal, of the high value attached by the Chinese to honorary distinctions for literary and official merits.

H. TORRENS, Esq., *V. P. Asiatic Society of Bengal, &c.*

DEAR SIR,—I send the accompanying Translation for the Bengal Asiatic Society, regretting that it is not of greater value.

Should the Society send me the remainder of the inscription on the Bell, so that it will reach me without a heavy postage, I shall feel happy in furnishing them a complete translation.

Willing to promote the great objects of this parent institution as far as I can in this remote theatre of its operations,

I remain,

Your's truly,

D. J. MACGOWAN.

Hongkong, 29th August, 1844.

Translation of a Portion of the Inscription on the Ningpo Bell at Calcutta, by D. J.

MACGOWAN, M. D. of the Missionary Hospital at Ningpo.

Dr. Macgowan presents his compliments to the Asiatic Society of Bengal, and begs their acceptance of the subjoined translation of the inscription (kindly furnished him by its Secretaries,) copied from the Chinese bell from Ningpo, now in Calcutta.

Dr. Macgowan regrets that the portion copied should have been merely a list of the principal Mandarins of the district, with a list of the subscribers who contributed money for the casting of this, the principal ornament of one of their splendid temples.

The remaining portion of the inscription is doubtless of a religious character, though it may contain passages of historical interest, as bells are the only ancient monuments the Chinese possess.

Should the Asiatic Society desire a complete translation of the inscription, Dr. M. will be happy to accede to their request:

Translation.

“ Wangson, Judge of Chekeang, inspector of Ningpo, Shadu Shing—Tacchoo, superintendent of customs and overseer at Tungling raised one step, and recorded seven times.

“ Sickchaun, Acting Judge of Chickeang, inspector of Ningpo, Shadu Shing and Toechow, acting receiver of customs, and prefect of Ningpo, twice.

“ Leongkemfuh, Marine Magistrate of Ningpo, Portmaster, Assistant Prefect residing at Taetsung, raised one step.

“ Chowcheying, Salt Inspector of Ningpo district, and assistant in the Hydraulic department.

“ Footan, by Imperial appointment, assistant prefect and Magistrate at the Kin country in Ningpo district, raised three steps and recorded three times.

“ Chinymuhang, a graduate of the first degree and Professor.

“ Chukwongue, instructor of the Ningpo College, raised one step and twice recorded.”

The three sons of Wootingseang, of the Hongchoo foundry, made the bell (date not on this part of the inscription.)

Subscribers' Names.

“ Wanguëiching, Letingsieang, Kaduteen Seeng, Legeseih, Weishetow, Chinche-thon, Lemkiashoon, Kwongheongtring, Lepengson, Sinchoonping. Chinkaemhuy, Chinchesen, Choe Choonuchug, Linkinunch, Lekoatoes, Lenkengans Chinyungseih Chinkeho, Leabynensih, Langheanyut, Chingpangpoo, Gomyongchow, Weiuchuykmo, Tenshoow, Wongwhongmong, Linpintro, Wootoque, Chinchousee, Chinkeangshan, Tsangpongshe, Chonghunping, Tangpihdung, Henlungshun, Wang-monghd, Modurhepa, Taytajan Tungmanghe, Chingmankmang.

“ All the Buddhas through all ages.”

Resolved—That the whole of the inscription be taken off, and sent for translation and subsequent publication in the Journal.

Read a letter from Captain Newbold, M. N. I. Asst. Commr. Kurnool, Madras Territory, accompanying a note on the Ajaib ub Muklukhat.

This curious and interesting paper was referred to the Editors of the Journal for early publication, that it may have also the advantage of Dr. Sprenger's comments.

Read the following letter from J. Marshman, Esq. Serampore, to the Sub-Secretary.

H. PIDDINGTON, Esq.,

MY DEAR SIR,—I annex to this note an extract of a letter I have just received from Mr. Burgess, an American Missionary at Ahmedabad. He has begun in good earnest the pursuit of Oriental literature. Could you assist him to a copy of the number he requires, the value of which I shall be most happy to remit to the bookseller. He also asks me whether the Journal is taken in by the Oriental Society, lately established in Boston, and indeed whether a single copy is sent to America. He also adds, that it is strange not a copy can be procured at Bombay.

JOHN MARSHMAN.

"Shall I be pardoned in asking you to procure for me, or perhaps send this note to the proper agent who will despatch to me a Number of the Asiatic Journal published in Calcutta, containing a list of Sanscrit words, which correspond with Greek and Latin words, &c. (I do not know the title of the article or the No. of the Journal in which it is found,) which I think has been printed during a year past. I have understood that a more extensive comparative list of Sanscrit words with other Languages, has lately been published, and if possible I wish to procure it."

The No. of the Journal was ordered to be supplied for Mr. Burgess, and that arrangements should be made to supply the Journal to persons desirous of purchasing it on that side of India.

Read the following letters from J. S. Owen, Esq. accompanying the different specimens to which they refer.

H. TORRENS, Esq., *Secretary Asiatic Society.*

SIR,—I have the pleasure to forward for the Society's inspection and acceptance, a few nuts of a new species of *Areca catechu* (palm,) just arrived from the Naga hills.

Calcutta 29th October, 1844.

JOHN OWEN.

H. TORRENS, Esq., *Secretary Asiatic Society.*

MY DEAR SIR,—I beg to hand you for the Society's inspection and acceptance, some juice from the "*Ficus elastica*," of the Naga hills, which has just arrived from that quarter. I am inclined to think it will be found of a very superior quality.

Also some juice from the *Mackoi*, (Assamese) or *Messua Ferræa*, Linn. The difference in color is solely attributable to age, the transparent piece being of young exudation, and the more dark one, is I should say of about three years growth.

JOHN OWEN.

To H. TORRENS, Esq., *Secretary Asiatic Society.*

SIR,—I have the pleasure to send you some musters of the most valuable barks with portions of wood attached to each.

They are from the Naga hills, and I much regret that more have not arrived.

26th October, 1844. 12, Chouringhee.

JOHN OWEN.

With the thanks of the Society to Mr. Owen, a request was ordered to be made to him for some account of the properties of the various articles.

Read the following note from Captain Bogle, Commissioner Arracan, accompanying the specimens to which it refers.

I have the pleasure to send you per "Amherst," for the Asiatic Society, a piece of Teak wood cut in the Forests of Arracan!! also a packet of Hill people's clothes. I regret I have not time to write fully about them to-day, but I will do so by dak in a day or two, mean time this will suffice to let you know that these things are in the "Amherst" for you.

A. BOGLE.

Akyab, 22d August, 1844.

Two plaster casts of Fossil Tympani of Whales, taken by the Rev. Professor Henslow from the Suffolk Crag formation at Felixstow, were presented by Captain Kittoe, B. N. I.

The Curator, Geological and Mineralogical department, being only convalescent from a severe illness, had been unable to prepare any report for this month.

For all the above presentations and contributions, the best thanks of the Society were accorded.

Proceedings of the Asiatic Society, for the month of DECEMBER, 1844.

The monthly Meeting, which had been unavoidably postponed, was held on Tuesday evening, the 17th December, 1844.

The Rev. J. Hæberlin, in the Chair.

The following members proposed at the last meeting were ballotted for and declared duly elected :—

Jas. Alexander, Esq. C. S. .

Jas. Furlong, Esq. Mulnauth Factory.

And the following gentlemen were proposed as Members :—

F. Boutros, Esq. Principal of the Dehli College, proposed by E. C. Ravenshaw, Esq. C. S., and seconded by W. C. Quintin, Esq. C. S.

A. Christopher, Esq. of LaMartiniere, proposed by Major General Hodgson, and seconded by H. Torrens, Esq.

Lewin Bentham Bowring, Esq. C. S., proposed by Major General Hodgson, and seconded by H. Torrens, Esq.

E. Blyth, Esq. Zoological Curator, Associate Member, proposed by H. Torrens, Esq., and seconded by H. Piddington, Esq.

John Ward, Esq. Messrs. Jessop and Co. Civil Engineer, proposed by Lieut. Col. Forbes, B. E., and seconded by Captain Goodwyn, B. E.

A. W. Steart, Esq. B. M. S.,* proposed by George Hill, Esq., and seconded by H. Torrens, Esq.

Read the following list of books presented and purchased :—

Books received for the Meeting of the Asiatic Society, Tuesday 17th December, 1844.

Books Presented.

1. The Horn Book of Storms for the Indian and China Seas, by H. Piddington, from the author.

2. Notes on the Naga Tribes in Communication with Assam, by John Owen, by the author.

3. Zeitschrift für die Kunde des Morgenlandes, herausgegeben von Christian Lassen. Sechsten Bandes Erstes Heft 1844. By the author.

* *Memorandum.*—In the case of this gentleman who was on the point of embarking for Europe, it was proposed to proceed immediately to ballot but the sense of the Members present, being decidedly against such an innovation on the established rule the proposal fell to the ground.

4. Calcutta Journal of Nat. History by J. McClelland, Bengal Medical Service, 2 Nos. 16 and 18 for January and July 1844, and a Complete set in exchange for the Journal of the Society, from the date of the Commencement of the Journal of Natural History.

5. Journal of the Agricultural and Horticultural Society of India, vol. iii, part ii, by the Society.

6. Calcutta Christian Observer for December 1844, by the Editor.

7. Supplement Calcutta Christian Observer, by the Editor

8. The Oriental Christian Spectator, November 1844, by the Editor.

9. The Palms of British East India, by Dr. Griffith.

10. Proceedings of the Royal Society for

1838 Nos. 31 to 36.

1839 „ 37 to 41.

1840-41 „ 42 to 46.

1842 „ 47 to 55.

1843 „ 57 to 58.

11. Proceedings of the Calcutta School Book Society. Reports 1st to 10th and 12th, by the Rev. Mr. Long.

12. Description of some nondescript insects from Assam, by the author, W. Griffith, Esq. M. M. 8. 2 copies.

13. Philosophical Transactions of the Royal Society of London from 1838 to 1843, 6 vols. and part I of 1844, by the Society.

14. The Royal Society for November 1841, and November 1843, by the Society.

15. Meteorological Register, kept at the Surveyor General's Office, Calcutta, for October and November 1844.

Books Purchased.

16. Researches into the Physical History of Mankind, by J. C. Prichard, vol. 4.

17. The Annals and Magazine of Natural History, including Zoology, Botany, and Geology, vol. 14, Nos. 90 and 91.

18. Journal Des Savans, August, 1844.

19. The Athenæum for September 14th, 21st and 28th, 1844.

20. The History of Etruria, by Mrs. H. Gray part I.

21. A Manual of Ancient History. Translated from the German of A. H. L. Heeren.

22. Geography of Arabia, by G. Foster, 2 vols.

23. Classical Museum, Nos. 2, 3, 4 and 5.

Read the following letters from the Society's London Agents and booksellers:—

To H. PIDDINGTON, Esq. Secretary of the Asiatic Society Calcutta.

SIR,—We have the pleasure to acknowledge the receipt of your letter of the 14th July, enclosing a bill of lading for a case of books shipped on board the *Lady Flora Hastings* for the Asiatic Society of Paris. On the arrival of the vessel the case shall be forwarded to the Society agreeably to your instructions.

London, 10th September, 1844.

WM. H. ALLEN & Co.

To H. TORRENS, Esq. &c. &c. &c. *Secretary to the Asiatic Society of Bengal.*

Sir,—We have the pleasure to advise you of our having forwarded by the ship "Tudor," to your address, care of Messrs. Ostell and Lepage, a case of Books for the Society which has been received from Trinity College, Dublin, with a request that it might be forwarded to the Asiatic Society by an early opportunity. We have no doubt you will have heard from Trinity College, respecting the same ere this.

By the same ship we have likewise forwarded to your address a small box containing shells, &c. which are presented to the Society by Dr. Vandem Busch of Bremen. The Dr. will be much obliged by your acknowledging the same. We have paid fifteen shillings, expences on the box from Bremen, which we shall charge in our account.

Messrs. Ostell and Co. have been requested to deliver the cases to the Society as soon as they reach them.

London, 2d September, 1844.

WM. H. ALLEN, AND Co.

An application having been made by Mr. H. M. Smith, the artist employed in reducing and lithographing the fine coloured map of the Nerbudda river, which appeared in No. 153 of the Journal, for a small gratuity above his contract, on the ground that the work had been more difficult and costly than he at first expected, and some difference of opinion having arisen in the Committee of Papers, as to the propriety of according this increase, it was referred to the Society, who voted Mr. Smith a gratuity of 25 rupees above the amount of his bill.

Read letter from the Officiating Secretary to the Government of India :—

No. 588.

From T. R. DAVIDSON, Esq. Officiating Secretary to the Government of India, to H. TORRENS, Esq. Vice President and Secretary Asiatic Society, dated the 30th November 1844.

Home Department.

SIR,—I am directed to acknowledge the receipt of your letter of the 11th Instant, with its enclosure, and to communicate the desire of the Right Hon'ble the Governor General in Council, that the Asiatic Society will be good enough to forward to this Department 25 copies of the Memoir* therein referred to.

Fort William, the 30th Nov. 1844.

T. R. DAVIDSON,
Offg. Secy. to the Govt. of India.

From the Secretary of the Military Board :—

No. 3,954.

To H. TORRENS, Esq. *Vice-President and Secretary of the Asiatic Society.*

SIR,—I am directed by the Military Board to acknowledge the receipt of your letter dated the 6th current, and to state that application should be addressed to

* On the navigation of the Nerbuddah river with a map, see Journal No. 1833. One hundred copies were also forwarded for the Government of the N. W. P.

Government for Lieut. Yule's papers on the Coal Formations at Cheera Poonjee, as without previous sanction, the Board are not at liberty to grant copies (or originals) of any public documents.

2. The Board desire me to express their thanks for the very polite and liberal offer of the map and memoir of the course of the Nerbudda, by Lieut. Shakespear, and request to be favoured with 6 copies, if so many can be conveniently spared.

Fort William, Military Board

Office, 25th October, 1844.

J. GREEN, *Secretary.*

From the Secretary to the Government of North West Provinces :—

No. 901.

From A. SHAKESPEAR, Esq. Asst. Secy. to the Government N. W. P. Agra, to H. TORRENS, Esq. Secy. Asiatic Society Calcutta, dated Agra, the 2d Oct. 1844.

Genl. Depart. N. W. P.

SIR,—I am directed to acknowledge the receipt of your letter of the 10th ultimo, and to state that His Honor will be glad to receive 100 spare copies of the Note on the Nerbuddah, and of the map of that river at the cost price.*

Agra, the 2d Oct. 1844.

A. SHAKESPEAR.

Asst. Secy. to the Govt. N. W. P.

No. 1031.

From A. SHAKESPEAR, Esq. Asst. Secy. to Govt. N. W. P., to the Secy. Asiatic Society, Calcutta, dated the 5th Nov. 1844.

Genl. Depart.

SIR,—I am desired to place at the disposal of the Asiatic Society for publication in their Journal, the accompanying "Notes on the subject of the Kamaon, and Rohilcund Turæe," compiled by J. H. Batten, Esq. Senior Assistant Commissioner, Kamaon proper.

Agra, the 5th Nov. 1844.

A. SHAKESPEAR,

Asst. Secy. to Govt. N. W. P.

From the Secretary to the Government of India :—

No. 792, of 1844.

From F. CURRIE, Esq. Secy. to the Govt. of India, to the Secy. to the Asiatic Society, dated Fort William, the 9th Nov. 1844.

Foreign Depart Secret.

SIR,—By direction of the Governor General in Council, I have the honor to transmit to you for such notice as the Society may deem them to merit, the accompanying papers received from Major R. Leech, C. B. containing information of certain countries little known to Europeans, lying beyond the Indus and Cabool rivers.

2. You will be pleased to return the original papers when no longer required.

Fort William, the 9th Nov. 1844.

F. CURRIE,

Secy. to the Govt. of India.

* No charge is made by the Society for these returns for the courtesy of Government, the Society considering it as one of its first duties to aid as much as possible in all matters connected with the public service or the diffusion of knowledge.—EDS.

No. 802 of 1844.

From F. CURRIE, Esq. Secy. to the Govt. of India, to H. TORRENS, Esq. Secy. to the Asiatic Society, dated Fort William, the 16th Nov. 1844.

Foreign Depart. Secret.

SIR,—I am directed by the Governor General in Council to transmit to you, for such notice as the Society may deem them to merit, the accompanying papers received from Major R. Leech, C. B. containing information regarding the Hazarehs and the early Ghilzaees.

2. You will be pleased to return the original documents for Record in this office when no longer required.

Fort William, the 19th Nov. 1844.

F. CURRIE,
Secy. to the Govt. of India.

From the Under-Secretary to the Government of India:—

No. 805, of 1844.

From W. EDWARDS, Esq. under Secy. to the Govt. of India, to H. TORRENS, Esq. Secy. to the Asiatic Society, dated Fort William, the 16th Nov. 1844.

Foreign Depart Secret.

SIR,—I am directed by the Right Hon'ble the Governor General in Council, to transmit to you, for such notice as the Asiatic Society, may deem them to merit, the accompanying papers received from Major R. Leech, C. B. containing an account of the early Abdhalees, and notes on the religion of the Sikhs.

2. You will be pleased to return these documents for record in this office when no longer required.

Fort William, the 16th Nov. 1844.

W. EDWARDS,
Under Secy. to the Govt. of India.

The papers received from Government with the foregoing communications were referred to the Editors of the Journal for publication or extracts.

Read the following memorandum by the Sub-Secretary:—

Memorandum.

In a letter to the Sub-secretary of August last, the Right Hon'ble Sir Edward Ryan says,

“ The picture for the Asiatic Society is, as far as I am concerned, finished, the artist is Mr. Laurence. It might be completed, and dispatched in January next, (until then, there will be no good ship, and the season is unfavourable,) but the artist may try to keep it for the exhibition which I shall endeavour to prevent. The picture for the Asiatic Society has been seen by Mr. Thoby and Mr. William Prinsep.

I am happy to tell you that Mr. Lay, has nearly finished an admirable likeness of Mr. Thoby Prinsep, for the Asiatic Society.

A complete copy of ABDUL RUZZACK'S DICTIONARY OF THE TECHNICAL TERMS ON THE SUFAS, edited in the original Arabic by A. Sprenger, Esq. M. D. B. M. S., and printed at the expense of the Society, was on the table as a work finished and to be published in a few days.

The following extract of a letter from Dr. Sprenger, relative to it was read :—

I put "to be sold by Allen and Co." in the title page, I wish that arrangements might be made to have the Society's books sold at all these places, (particularly by Brockhaus who besides Germany, provides Russia and Italy with books,) in order to make them known and more generally useful, I know all the parties personally, and if you like I will be your *chargé d'affaires* in concluding treaties of commerce with them.

A. SPRENGER.

Chinsurah, November 30th 1844.

Read the following note from the Secretary : and it was referred to the Committee of Papers to recommend the number of copies, for which the Society should subscribe :—

Dr. Høberlin announced, through the Secretary, his intention of publishing a Sanscrit Anthology consisting of fifty brief, but choice specimens of the best school, that of Kali Dasa, of Sanscrit poetry, didactic, elegiac, and other. This offers to the Sanscrit scholar a description of work as yet a desideratum in the learned world, a book namely which may enable him to study in brief, and at small cost, the best, and choicest classical styles of eminent writers in that ancient and admirable language. Dr. Høberlin proposes to publish the work himself, but in communication with him, the Secretary suggested to the Society their taking a certain number of copies of it. It will prove a most valuable book to the Society for the purpose of distribution to learned bodies, and individual scholars in correspondence with it. The copies will be delivered at trade price. He stated that he was not prepared to note at present the number of copies to be taken, but after making a list of quarters in which they might be distributed, and a reasonable stock of reserve copies, the Secretary said he would have the honour of laying that list, definitely numeralised, before the Society if the general proposition be favourably received.

Read the following letter from the Zoological Curator :—

To the Secretary of the Asiatic Society.

SIR,—I wish to call your attention to the necessity that exists for some further assistance in my department of the museum. It is to no purpose that I devote more than double the number of hours to the business of my office, than were stipulated at the time I took charge of the Museum; and that I devote my *undivided attention* to those duties, without receiving any additional remuneration for thus labouring so many extra hours daily. In consequence chiefly of those exertions, the labour in my particular department has increased to that degree, that it is impossible for any one person, or even for two or three, to get properly through it. What with corresponding, the necessity of attending visitors who manifest an interest in the Museum,

and a variety of current business of daily urgency, I find it impossible to make that progress, which I wish and desire, not only in the preparation of the letterpress to accompany the publication of Burnes' drawings, but in various other matters which it is desirable should meet with every attention. There is, indeed, abundant occupation for one naturalist in the entomological department, whether or not comprising the whole of the annulose animals; and there is equal occupation for another in the investigation of Indian mollusca and other *Invertebrata* exclusive of the annulose animals. But, for the present, a good deal of assistance might be rendered to me by the appointment of a youth, whom I have for some time past employed in writing labels, and doing other work of the kind, and who might be engaged as a general assistant to me for a salary of 10 or 12 rupees a month to begin with, promising an advance in case of his affording satisfaction after a sufficient trial. It is quite necessary also that some addition should be made to the number of servants in my department. At present there is only one old man, who is quite superannuated, and I am constantly obliged to employ my own private servants in the Society's business. There is full employment for two additional servants, one as a messenger, and the other to assist in cleaning the specimens, glasses, &c.: the fact being, that the place of one who left some six months ago has never been filled up, his work having been since performed chiefly by lads who are now distributed over the country in the capacity of taxidermists, assisting different gentlemen who are active contributors to the Society's museum. Leaving these matters to your consideration,

17th December, 1844.

I beg to remain, Sir,
Yours very respectfully,
E. BLYTH.

Referred for discretionary intercourse with the Secretary.

Read the following references to and from the Committee of Papers, and papers connected with them, on the subject of Major Jervis' proposal to execute glyptographs and lithographs for the Society:—

I have to circulate the extract accompanying.*

For my own part I think it in some sort our duty to patronise, and encourage local artists rather than go to England for our illustrations. If the Society are satisfied with what has been done hitherto, I may perhaps be directed to write to Major Jervis accordingly.

December, 6th, 1844.

H. TORRENS,
V. P. &c. &c.

Memorandum by the Sub-secretary.

MY DEAR TORRENS,—Looking at your note for the circulation of Major Jervis' letter and specimens of Lithography, the following views occur to me which the Committee should also I think bear in mind.

* See Proceedings of November.

1. The great merit of every pictorial work is, that it be either a faithful representation, or a faithful *copy* of the original representation when it is to be multiplied by the press: for from the moment that an artist is permitted to *improve* a drawing or a sketch, unless he does so under the eye of the person who first made it, the chances are a hundred to one that what it gains as a picture it loses as an honest copy of what was done on the spot. Major Jervis' lithograph of the *Argemone Mexicana* seems to have been subjected to *improvement*. It is too elegant for our common *Shial Kants*. We know that this has been carried to such a length in Europe that naturalists are now much occupied in divesting publisher's *pictures* of their artistical improvements, by referring back to the original drawings, however faulty these may be in many points.

2. We have rarely, if ever *first rate* sketches or drawings in India, though we often have them good, and spirited, and conveying a vivid idea of the place, plant or animal, &c. and we have sometimes the advantage of having the naturalist on the spot to correct his own work* or shew the artist how far he may do it for him. By sending to Europe we at once lose this important advantage.

3. If we had always *first rate* drawings we might perhaps with truth say we could not do justice to them. But I submit that, hitherto, we have most certainly given *most accurate copies of what we had to copy from*? and that the question is really, situated as the Society is, not if we can give first rate work, but if we can give five hundred *exact copies* of the works put into our hands: I do not allude here of course to the cheapness or dearness, distance, loss of time, risks of loss, (or must we keep duplicates?) &c. &c. &c.

4. Again. The Society is always *in trust* for these matters. Are we justified, I should ask, in trusting out of our safe custody the labours of others? And this in the face of the many reports which we hear of the eager rivalities of European naturalists? How *could* the Society for instance send Dr. Cantor's Chusan drawings or those of Burnes, &c. to Europe?

5. As far as I am concerned it would be a great load of work taken off my file, for you know what artists, and printers, and authors here are; so that I am really interested that all the work *should* be sent to England!

6. I venture then to request of you, for I think it will assist the Committee in forming their judgment, to circulate with Major Jervis' proposal, the following copies with originals, which are in various styles, and which have not yet been seen together by the Committee.

The Burnes' drawings have already been exhibited, and as coloured lithographs have been pronounced most creditable work, and most faithful copies.

European Artist, { 1. Dr. Griffith's Botanical plates to Cantor's Chusan Zoology, 4
Mr. Bennet, { drawings.

{ 2. Plate I of Dr. Cantor's Chusan Zoology, *Vespertilo irretitus*.

Native Artist, .. 3. Lt. Yule's two Kasia Hill drawings.

European Artist, { 4. A jaw and teeth from Dr. Spilsbury's Fossils.
Mr. Bennet, .. }

Native Artist, .. 5. Siamese Emperor, Col. Lowe, 2 drawings.

7th December, 1844.

H. PIDDINGTON,
Sub-Secretary, &c.

* As in the case of Dr. Griffith with his Botanical Plates to Cantor's Chusan Zoology. See subsequently his letter.

The accompanying papers with a memorandum from the Secretary are re-circulated by his desire, and the specimens of our work as ready for the Journal and Researches.

H. PIDDINGTON,

Thursday Noon.

Sub-Secretary Asiatic Society.

I beg to re-circulate these papers.

It is easy to advocate the acceptance of Major Jervis's offer, but not so facile to explain to the Editor of a monthly Journal how he is to satisfy his contributors by speedy publication of their illustrated papers, as well as to insure them against risk of loss of their original drawings when the publication of their articles, and the very conservation of their originals, is contingent upon the hazards of a transmission to England to a third party?

To put the matter as fully as possible before the Committee, I circulate the specimens or proof lithographs of drawings now on hand for publication in the Journal and the Researches, with their originals. The botanical lithographs are to illustrate Dr. Griffith's paper for Cantor's Chusan.

I submit that these local productions are rather above the average of such work for scientific periodicals, and although inferior to Major Jervis', yet respectable and even creditable to the Journal, and not unworthy the Researches.

I trust the Committee will not make the difficult task of editing a scientific Journal in India, next to impossible, by requiring illustrations of papers published monthly to be prepared in a country whence, at the shortest, I could not get them under five months.

The preparation of plates for the Researches by Major Jervis is I think most expedient.

H. TORRENS,

V. P. and Secretary Asiatic Society.

Additional Memorandum by the Sub-Secretary.

Between the first and second circulation of the papers relative to Major Jervis' proposal, thinking that the opinion of a scientific man, himself an artist, of experience in Indian scientific publications, and well acquainted with the business details as well as the tricks which are, it is said, sometimes practised in these matters, would be useful, I wrote to Dr. Griffith, then on his way down the river, on the subject. I unfortunately did not keep a copy of my letter, but I was very careful not to say any thing which could bias him either way; stating only that as it had been proposed, and was now under consideration, to send drawings home for lithographing for the Society's publications I should be glad to have his opinion of this proposal as regarded the interests of men of science, the risks of the drawings, copying here, &c. &c. and the style of execution of Calcutta artists; his answer is as follows:—

MY DEAR SIR,—I think the state of copying drawings in Calcutta, promising enough to entitle Calcutta artists to patronage; two or three more attempts, and their copies would be equal to most of the drawings in ordinary periodicals, and at any rate be quite equal to properly illustrating the subjects.

Scientific drawings require scientific superintendence even in England, and to have one's drawings copied away from one would be nearly as bad as having one's MS. printed while one is absent. No. 1. of mine is very fair; the faults of the others are faults of the drawings which were not bold enough. This arose from inexperience on my part; I am quite certain that very creditable drawings can be made in Calcutta. with ordinary care on the part of authors and proper supervision of the artists. Therefore I would not send drawings home, myself unless a very high degree of finish was required.

Kedgerie, 15th December, 1844.

Yours
(Signed) W. GRIFFITH.

After some discussion it was resolved:—

That as an experimental measure plates for the Researches be generally referred to Major Jervis, and those for the Journal be generally executed here.

It was mentioned that Mr. Heatly had addressed a letter to the Secretary embodying some remarks on the want of connection between Home and Indian Scientific Societies, and submitting some views as to a remodelling of the present working system of the Society, but no definite proposal being brought forward, discussion was for the present necessarily postponed.

Report of the Curator Geological and Mineralogical Departments and of the Museum of Economic Geology, for the month of October.

Geological and Mineralogical.—We have this month to announce the highly interesting discovery by our zealous member and contributor Captain Newbold, of Bone caves in Southern India, and I cannot better do so than in the words of his letter.

Captain Newbold writes from Kurnool as follows:—

“Enclosed is a brief note of some of my late labours, pray correct any thing wrong I really have hardly time to write.

If similar cave deposits have hitherto been not discovered in your part of India, kindly notice the fact in an Editorial note. These are the first fruits from Southern India, Have you got hold of Voysey's unpublished notes and map? if so, please let us in South India who are much interested, have the benefit by an early publication.”

His description of the Bone Caves will appropriately form an article for the Journal.

Dr. Rowe of the Artillery at Dum-Dum, it will be recollected, referred to the Museum for the identification of a few specimens of minerals which he had collected on the old Benares road on a march down.

In replying to him I requested specimens of the Corundums for the Museum, and some account of the locality if he could oblige us with one. He has been good enough to place at our disposal a very carefully kept itinerary of that road, which affords so many

useful hints to the Geologist and Mineralogist, that I should strongly recommend its publication. Though Dr. Rowe modestly disclaims any scientific merit in it, yet it evidently is the production of a gentleman who knew what he saw, and made the best use of the brief moments a military march allows to a medical man. It were much to be wished we had many such observers and tracks, for they would give us, if not correct sections, much useful Geological information, particularly if specimens of the rocks were collected and the inclination of the strata seen were noted.

I have completed the catalogue of Mr. Dodd's specimens which form a very handsome and instructive case in our Geological collection. The catalogue should be printed as the best means of preserving a record of it: and of the Society's property.

Dr. Spilsbury has sent us some more specimens of his sandstones with arborescent impressions, some of which are not superficial but go *through* the slab; and he inclines to think they may be fuci. I have tried both with the blowpipe, and the superficial ones are oxide of manganese; those penetrating these specimens are iron, and if they ever were organic there are now no traces of organic matter remaining; but in discussing this curious question, as far as I recollect, it seems to have been forgotten that it is not impossible the iron and manganese may yet be the remains of organic bodies, as for example the deep-sea fuci, of which we know nothing.

Mr. Dodd of the mint, on his departure for the Cape, has favoured us with a few specimens of sandstone and limestone from the Bhurtpore and Kerowlee Territory, of which his letter speaks as follows:—

I send you a few more specimens of sandstone from the Bhurtpore Territory.

A few specimens of limestone from the Kerowlee Territory, (the country where this limestone is found abounds with caverns and waterfalls, and I imagine it belongs to the Magnesian limestone formation) from Kerowlee, a fragment of coal was brought me when at Agra. There are also a few specimens of sandstone with ripple marks on them, also a few specimens of red sandstone, with what I imagine to be encrinital marks in them.

I thought these might be interesting as connected with some paper in the Asiatic Society's Journal.

5th November, 1844.

JAS. DODD.

P. S.—You will find some of the sandstone specimens contain casts of shells.

I have not had time to examine the shells of which he speaks. The mottled impressions on the sandstone are certainly not encrinital as far as I can perceive, and are, I think much more probably, as in other cases in Europe, and as suggested by a writer in the *Annals and Magazine of Natural History*, the result of some animal or vegetable substance discolouring the red iron tint of the original sand. Dr. Voysey *As. Res.* Vol. XV. p. 429, says of the Agra mottled sandstones that the spots are really spherical, and these appear also to be so in some places.

Museum of Economic Geology.—I may mention here that I sent some of our Museum circulars to my brother, who is much connected with Civil Engineers. He writes to me "My friend Sopwith writes to you by the 15th September mail. We are having 250 copies of your circular printed for distribution, Mr. Sopwith says he is sure Sir H. De la Beche, takes the greatest interest in the success of the Asiatic Society and Indian Museum, and has shewn him your report, but Sir H. De la

Beche really is overwhelmed with work which he is sure is the only reason why you have not heard from him."

Lt. Chamier of the Ordnance Department, sent us some time ago some clippings of the Cabul Trophy gun at Agra for examination, mentioning that the native belief was that these guns contained considerable proportions of the precious metals. The Sp. gravity was however, found to be only 8.35, that of good gun metal being about 8.40,* and it was found to be a bad compound of impure (sulphuret of) copper with small proportions of tin, lead, zinc and traces of iron; and certainly containing no trace of gold or silver. As the yellow sulphuret of copper imitates gold in colour, and any white metal might be made to pass for silver, it is probable the native princes and their officers, if they *do* give any gold or silver for the gun, which they might easily be persuaded to do, are thus tricked by the founders. The frauds of goldsmiths and copper founders (*Sonars* and *Khansaries*) are pretty nearly proverbial in India, as witness the well known tale of the goldsmith and the Raja's idol.

Our active contributor Lt. Sherwill, of the Revenue Survey has sent us a highly valuable series of specimens comprising coal from the Rajarrah coal mines in Behar, and the various measures (Strata) which are passed through before it is found; his list is as follows:—

Specimens.

No. 1.—Black stone, found in four separate strata before reaching the 11 feet stratum.

No. 2.—Shale from the 11 feet stratum.

No. 3.—Stone from above or forming the roof of the 11 feet stratum.

No. 4.—Stone found in large masses in the 11 feet stratum.

No. 5.—A piece of coal from the 11 feet stratum covered with pyrites.

No. 6.—A piece of the coal from the 11 feet stratum.

No. 7,—Coarse sandstone, from above the bad coal of an experimental and forsaken pit, this stone is found about 40 feet below the surface of the soil.

No. 8.—Lying under No. 7.

No. 9.—Lying under No. 9.

This pit was forsaken not offering any coal worth quarrying, depth about 75 feet.

Vertical section of the strata in the shafts at Rajharrah Colliery:—

* The composition of the statue of Louis xv. was copper 82.45, zinc 10.30, tin 4.10, lead 3.15. It sp. grav. 8.482, good cannon metal should contain 90 or 91 of copper, and 9 or 10 per cent. of tin; and as much as 14 per cent. of tin has been used. *Ure's Dictionary*.

						Feet. Inches.	
Loam,	....	....	....	....	....	17	6
White sand stone,	....	....	....	....	....	3	0
Coal, ..	....	....	....	....	....	1	6
Bad coal,	....	....	....	....	....	3	0
Black stone, ....	....	....	....	....	....	3	0
Coal,	....	....	....	....	....	3	0
Black stone, ..	....	....	....	....	....	4	0
Coal, ..	....	....	....	....	....	2	3
Black stone, ..	....	....	....	....	....	2	0
Coal, ..	....	....	....	....	....	1	0
Black stone, ..	....	....	....	....	....	7	0
Coal, ..	....	....	....	....	....	11	0
						58	3 South Pit.

Underneath Black stone or slate,....Unknown depth.

H. S. SHERWILL.

Mr. Martin of Gowhattee, Assam, has again contributed (to our general museum)* by an assortment of woods from that country 16 in number, completing with the former one of 9 sorts† 24 specimens in all.

No. 254.

To H. PIDDINGTON, Esq. Curator Museum of Economic Geology.

SIR,—I have the pleasure to advise you of the despatch to the care of my agents Messrs. T. H. Gardiner, and Co. of sixteen specimens of Assam woods numbered from IX to XIV, a list of which is annexed.

I have the honor to be, Sir,

Gowahattee, 4th Oct. 1844.

Your most obedient servant,
W. N. MARTIN,
Ex. Off. Lower Assam.

List being a continuation of Assam woods,

- | | |
|----------------------|------------------------|
| IX—Red Pine. | XVII—Bon Som. |
| X—Bar Paroolee. | XVIII—Ahohee Paroolee. |
| XI—Hooroo Kootolah. | XIX—Bur Karooee. |
| XII—Sisso. | XX—Podocarpus. |
| XIII—Amaree. | XXI—Coniaree. |
| XIV—Khootee Kurooee. | XXII—Phool Sapa. |
| XV—Gondhoree. | XXIII—Hatee Karuhal. |
| XVI—Kootulnah. | XXIV—Toko Palom. |

W. N. MARTIN,
Ex. Off. Lower Assam.

* But as addressed to me I acknowledge it here.

† Proceedings of May, 1844.

From Messrs. Gillanders and Co. I have obtained a cake of artificial fuel, which is the object of a patent at home ; and, as shewing how coal may be œconomised is always a proper addition to our Museum. I do not know the composition of this particular fuel which, however, is probably coal dust and some of the bitumens ; but I may mention that some years ago I ascertained that coal dust mixed in as large a quantity as would hold together with cow dung and a little earth, (the native composition for smearing floors, &c.) forms a capital fuel, where a slow steady fire, as in distilling or sugar drying house work, is required, and I made and burnt several hundred maunds of it. I made a communication to Government (Lord Auckland's) on the subject but never heard any thing in reply.

For all presentations and communications the thanks of the Society were voted.



